SAMSUNG

ML-7000 Series

ML-7050/7050N

SERVICE Manual

Laser printer

Contents

1. Precautions
2. Reference Information
3. Product Information
4. Disassembly
5. Trouble Shooting
6. Exploded Views & Parts List
7.Electrical Parts List
8. Block Diagrams
9. PCB Diagrams
10. Port Thru
(Network Printer Card)

ELECTRONICS

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1. Precautions

1-1 Safety precautions

Read each caution carefully

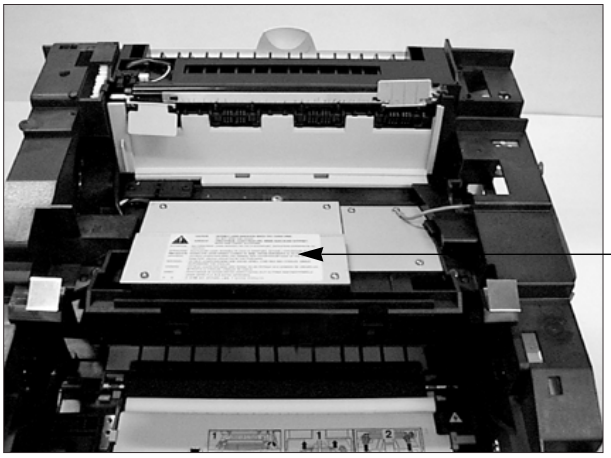
1. Do not use the pinter near water or when exposed to inclement weather.
2. Do not place this printer on an unstable cart, stand or table, the product may fall, causing serious damage to the product.
3. Slots and openings on the cabinet are provided for ventilation. To ensure reliable operation and to protect the printer from overheation, do not block or cover any of these openings. Do not place the printer in an enclosure unless the enclosure providesadequate ventilation.
4. Never push any kind of objects into the printer through the cabinet ventilaition slots as they may touch dangerous hihg voltage points, create short circuits, cause a fire, or produce an electrical shock. Never spill any kind of liquid on the printer.
5. Do not place the printer in a lacation where someone may trip on the cord.
6. Select a work surface that is lartge enough to hold the printer.
7. Operate this printer using the power source (110V, 220V, etc) indicated on the marking label. If you are not sure of the type of power source available, consult your dealer or local power company.
8. If you need to use an extension power cord with this printer, make sure that is uses a three-wire grounded cord and that the total ampere ratings for all of the products using the extension, do not exceed the extension cord ampere ration.
9. Do not allow anything to rest on th power cord or data communications cable.
10. Unplug this printer from the wall outlet before cleaning. Do not use liquid cleaners or aerosol sprays. Use a damp cloth for cleaning.
11. Do not touch the surface of the photo-sensitive drum as marks ro scratches may impair print quality.
12. Do not expose the drum unit to direct light for prolonged periods.
13. Use only standard papers, OHP films and approved envelopes.

1-2 Laser Safety Statement

The printer is certified in the U.S to conform to the requirement of DHHS 21CFR Subchapter J for Class I(1) laser product, and elsewhere is certified as a class I laser product conforming to the requirement of IEC 825.

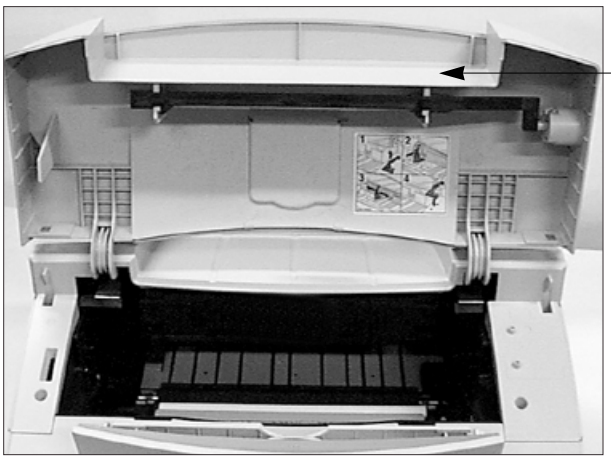
Class I laser product are not considered to be hazardous. The laser system and printer are designed so there is never any human assess to laser radiation above a Class I level during normal operation, user maintenance, or prescribed service condition

Caution : Never operate and service the printer with the protective cover removed from Laser Scanner Assembly. The reflective beam, although invisible, can damage your eyes



CAUTION - INVISIBLE LASER RADIATION WHEN THIS COVER OPEN.
DO NOT OPEN COVER
VORSICHT - UNSICHTBARE SASERSTRAHLUNG, WENN ABDECKUNG GEÖFFNET.
NICHT DEM STRAHL AUSSETZEN.
ATTENTION - RAYONNEMENT LASER INVISIBLE EN CAS D'OUVERTURE, EXPOSITION DANGEREUSE AU FAISCEAU.
ATTENZIONE - RADIAZIONE LASER INVISIBLE IN CASO DI APETURA, EVITARE L'ESPOSIZIONE AL FASCIO.
PRECAUCION - RADIACION LASER IVISIBLE CUANDO SE ABRE, EVITAR EXPONERSE ALRAYO.
ADVARSEL - USTNLIG LASERSTRÄLNING VED ÄBNING, NÄR SIKKERHEDSBRYDERE ER UDE AF FUNKTION, UNDGÄ UDSAETTELSE FOR STRÄLNING.
ADVARSEL - USYNLIG LASERSTRÄLNING NÄR DEKSEL ÄPNES, STIRR IKKE INN I STRÄLEN, UNNGÄ EKSPONERING FOR STRALEN.
VARNING - OSYNLIG LASERSTRÄLNING NÄR DENNA DELÄR ÖPPNADOCH SPÄRREN ÄR URKOPPLAD, BETRAKTA EJ STRÄLEN, STRÄLEN ÄR FARLIG.
VARO! - AVATTAESSA JA SUOJALUKITUS OHITEETTAESSA OLET ALTTINA NÄKYMÄTTÖMÄLLE LASER SÄTELYLLE ÄLÄ KATSO SÄTEESEEN.
주 의 - 이덮개를 열면레이져광에 노출될수 있으므로주의하십시오.

LSU caution label is located on the LSU top side



CLASS 1 LASER PRODUCT
LASER KLASSE 1
LUOKAN 1 LASERLAITE
APPAREIL A LASER DE CLASSE 1
TO IEC 825

2. Reference Information

2-1 Abbreviations and Acronyms

Tables 2-1 and 2-2 List abbreviations and acronyms which may be found in this service manual.

Table 2-1. Abbreviations

Abbv	Definition	Abbv	Definition
amps	amperes	lb	pound(s)
		lin	linearity
ass'y	assembly	lock	bus lock
badac	bad assess	mm	millimeter(s)
		neg	negative
bps	bits per second	od	open drain
clk	clock	OSC	oscillator
cm	centimeter(s)	OUT	output
CON	connector	PIC	picture
GND	ground	pos	positive or position
HLDA	hold acknowledge	pot	potential
HLDAR	hold acknowledge received	psynrq	page synchronization request
HLDR	hold request	pwr	power
HOR	horizontal	qty	quantity
in	inch(es) or input	sw	switch
INTA	interrupt Acknowledge	sync	synchronous or
			synchronization
INT	Interrupt	tach	tachometer
INTR	Interrupt request	Vcc	collector supply voltage(dc)
I/O	Input and Output	vert	vertical
mpx	multiplex	Vp-p	peak-to-peak voltage
		VR	variable resistor

3. Product Information

● Engine Specification

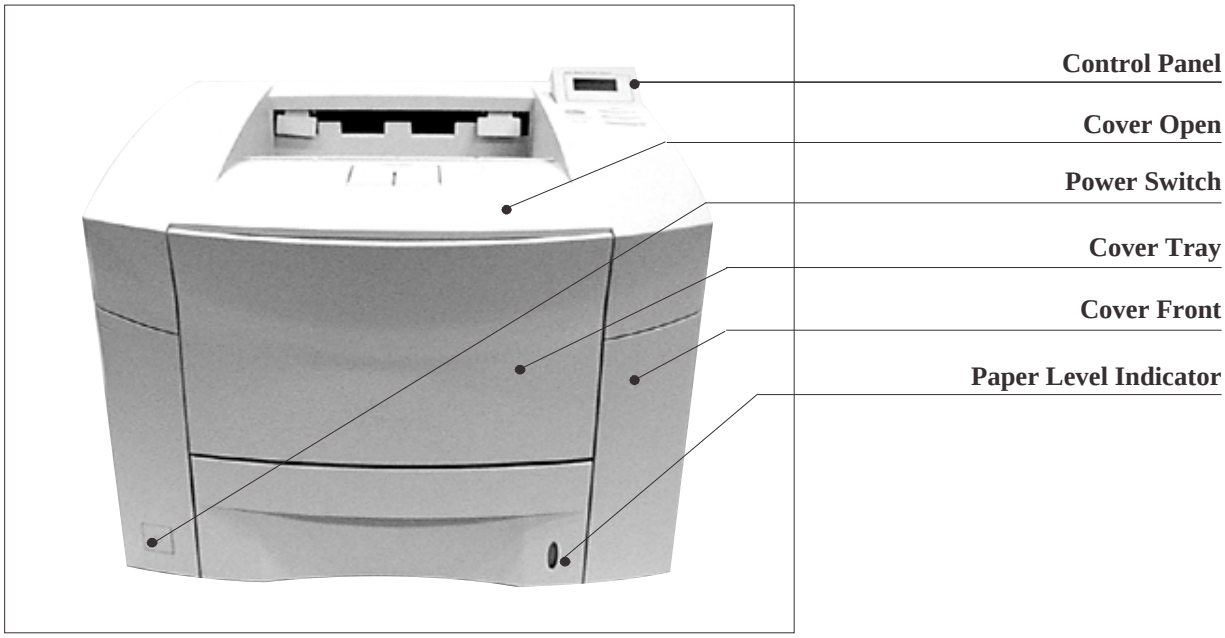
Item		Descriptions	Remarks
Engine	Speed	17 PPM	Letter
	Resolution	600 DPI +RET	
	Imaging	Electrophotography	
	Toning/Fusing	Non-mag monocomponent/contact	
	WarmUp time	Less than 60 secs	N/N condition
	FPOT	Less than 13 secs	standby mode
	Duty Cycle	Maximum 50,000 pages per month	
	Size(WDH)	427 × 442 × 301mm	
	Weight	Less than 16.5Kg (36.4lb)	not packaged
	Power Consumption	340W Avg/ 34W Sleep	
	Noise Level	Printing : ≤ 50dB Standby : ≤ 36dB Sleep : Background noise	Blow Fan off
mode	Input Capacity	500 sheets	Universal
	Optional Input	500 sheets (40 envelopes)	
	Output Capacity	250 sheets Face down	No face up
	MP Tray	100 sheets (10 envelopes)	
	Envelop Feeder	supported by Multi-Purpose tray, optional cassette	
Paper Handling	Type of Media	· Cassette : A4, LTR, FO, LEG, EXE, ISO B5 · MP Tray : Legal~A6, OHP, LABEL COM-10, MON, DL, C5, C6 · Optional Cassette : A4, LTR, FO, LEG COM-10, MONARCH, DL, C5	
	Duplexing	Paper : A4, LTR, FO, LEG	
	Paper Sensor	Yes	
Imaging Cartridge	CRU type	Single cartridge Replacement	
	CRU Life	8,000 pages at 5% coverage	
	Cleaning System	Mechanical Cleaning	
	Charging/Transfer	Contact Charging & Transfer	
	Toner Sensor	Yes	
	Toner saving	Yes	
Others	Control Panel	· 8× 2 LCD · LCD Display angle adjusting · Backlighting	
	Paper Level Indicator	Visible Mechanism	
	Power Switch	Front & Left side, Push button	

● Controller Specification

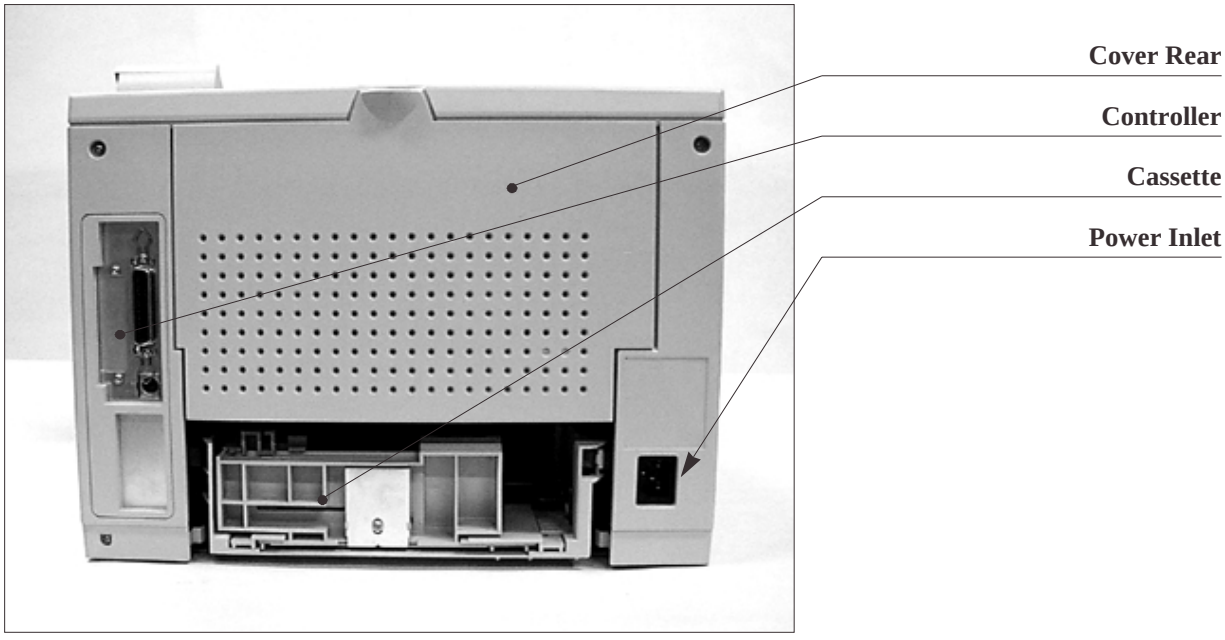
Item		Descriptions	Remarks
Controller	CPU	Power PC, 100MHZ	
	Emulation	· Default : PCL6 · Option : Postscript Level 2	
	Memory	· 12MB Standard · Max up to 132MB · Speed : 60nS ※ DRAM Module's Features · Refresh Time : 2048 Cycles/32mS · Fast Page Mode with Extended data out · CAS-before-RAS refresh capability · TTL compatible inputs and outputs · Single +5V ±10% power supply	
		· 2, 4MB Flash memory option · Postscript : 12MB Standard	P.S Simm Module
	Interface	· IEEE 1284 B type Option : Serial RS 232C InfraRed Adaptor connector Local Talk, Internal Network	
	AIS/AES	Y/Y	
	Font	45 Scalable Font , 1Bitmap Font	
	Port Thru (Network Printer Card)	· Ethernet · 10 base T / 100 base T · SNMP in MIB · TCP/IP · Netware, Windows, OS/2, Unix, Mac	TCP/IP, SPX/IPX Apple Talk, NetBEUI/NetBios
	Device Driver	PCL : Windows 3.1/95/98/NT, DOS	

4. Disassembly

4-1 Front View

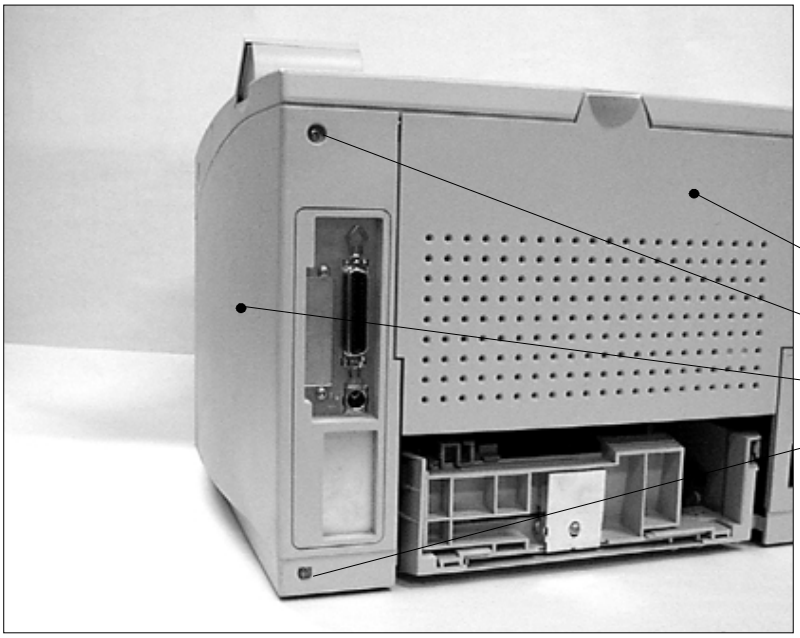


4-2 Rear View

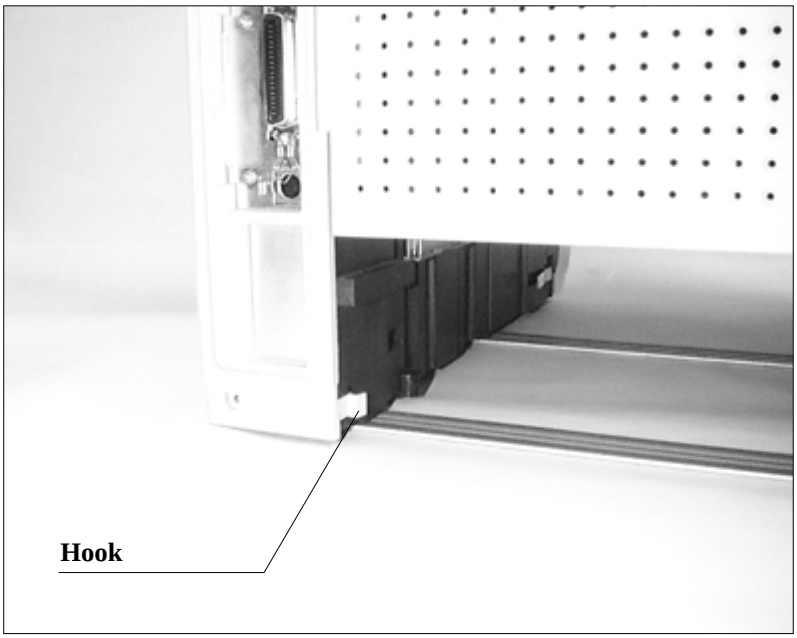


4-3 Cabinet Disassembly

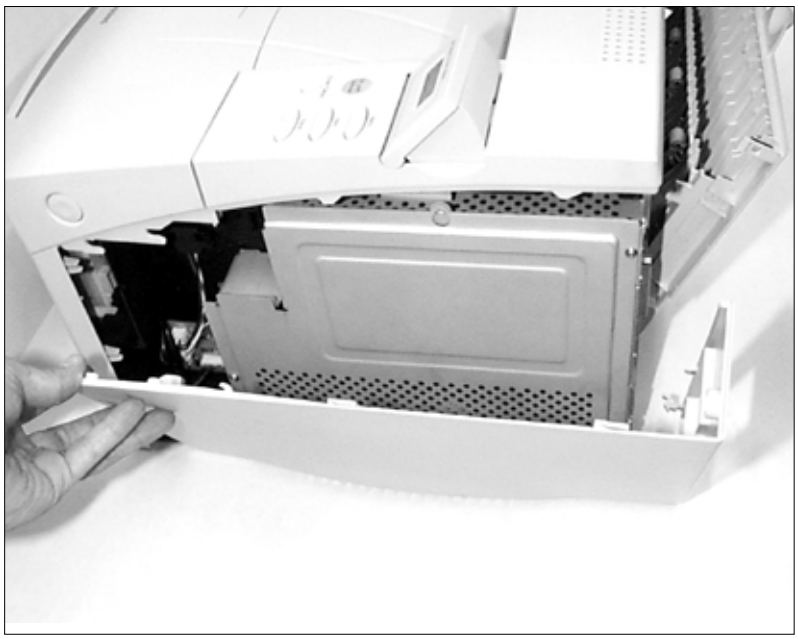
4-3-1. Cover Right



Remove the screws and open the Cover Rear.

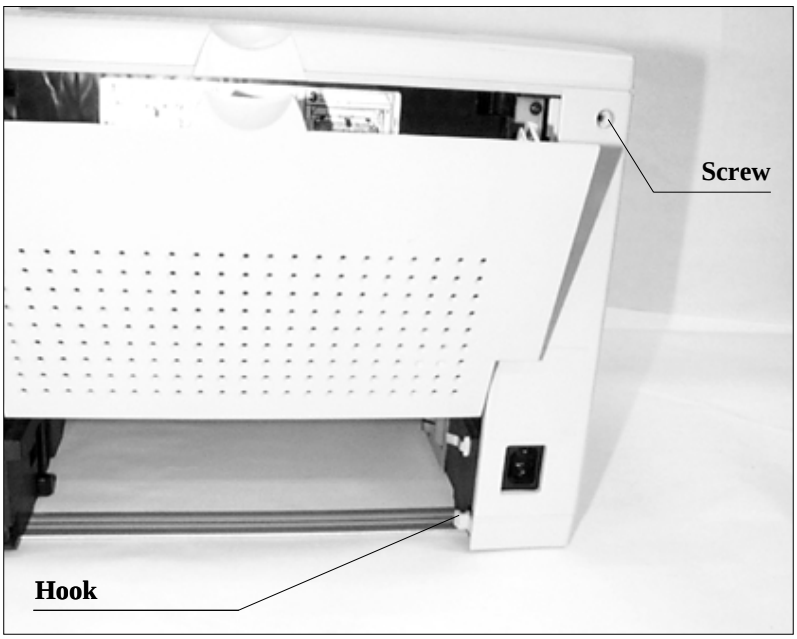


In order to remove the Cover Right. Please see the hook which locks the cabinet to the frame, right hand should first grab the hook and pull it out for releasing the hook from the frame.



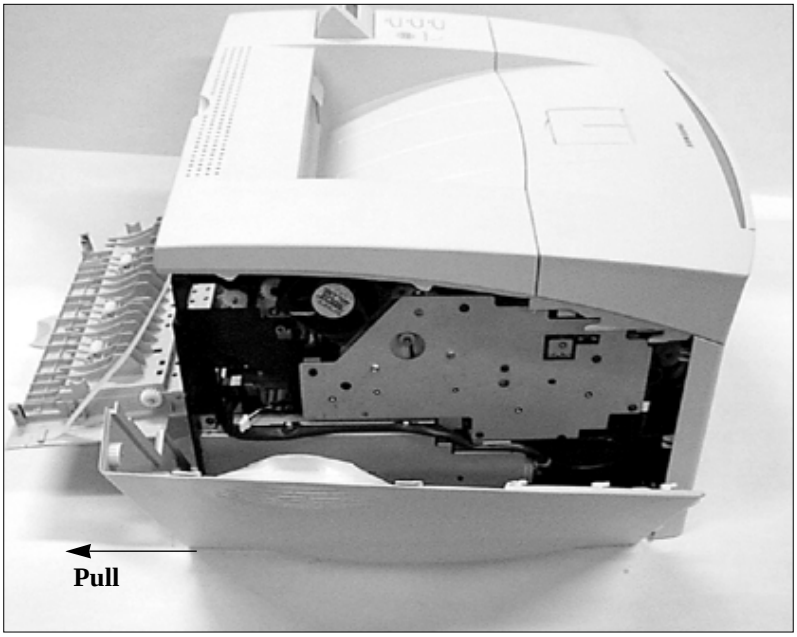
The left hand should slide the Cover Right to the backward.

4-3-2. Cover Left



Remove screw and open the Cover Rear.

Please see the hook of the Cover Left. Pull the Hook and release it from the frame.



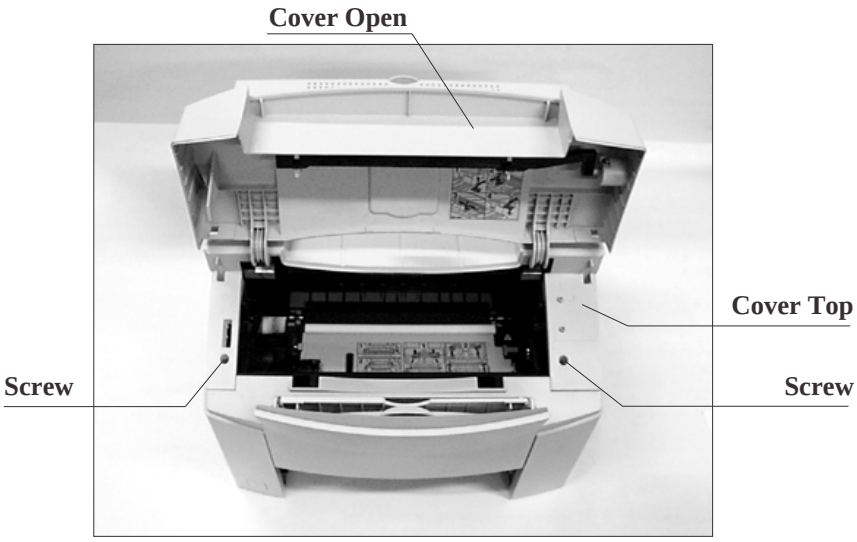
Slide the Cover Left to the backward with pulling the hook out.

The Cover Left can be easily removed.

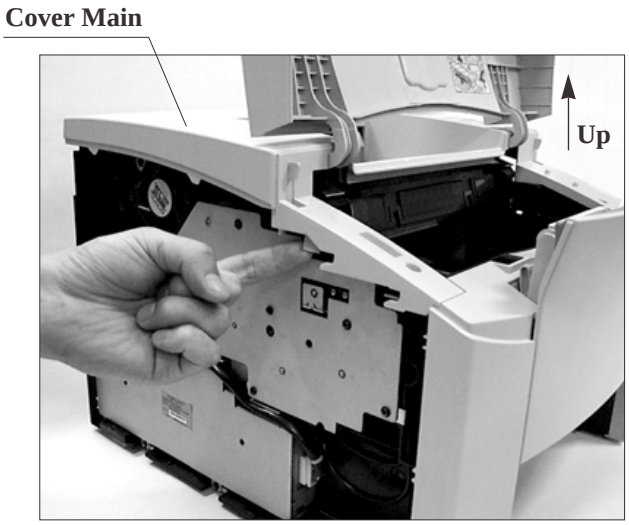
4-3-3. Cover Front

Please see the MP tray disassembly. (4-9)

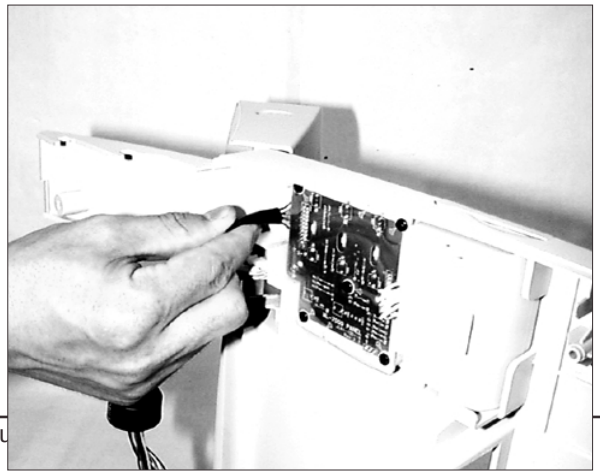
4-3-4. Cover Main



Open the Cover Open.
Remove two screws.

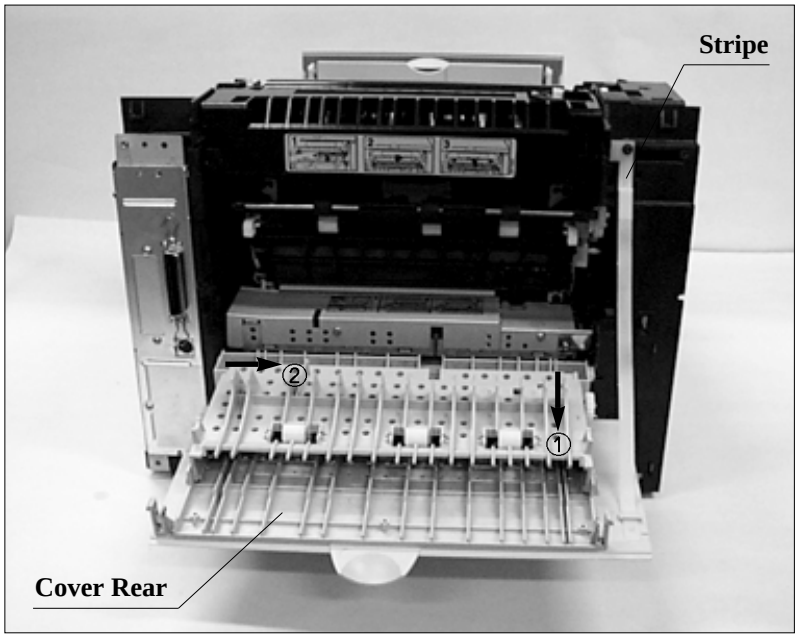


See the hooks.
Push the hooks up and pull them upward.

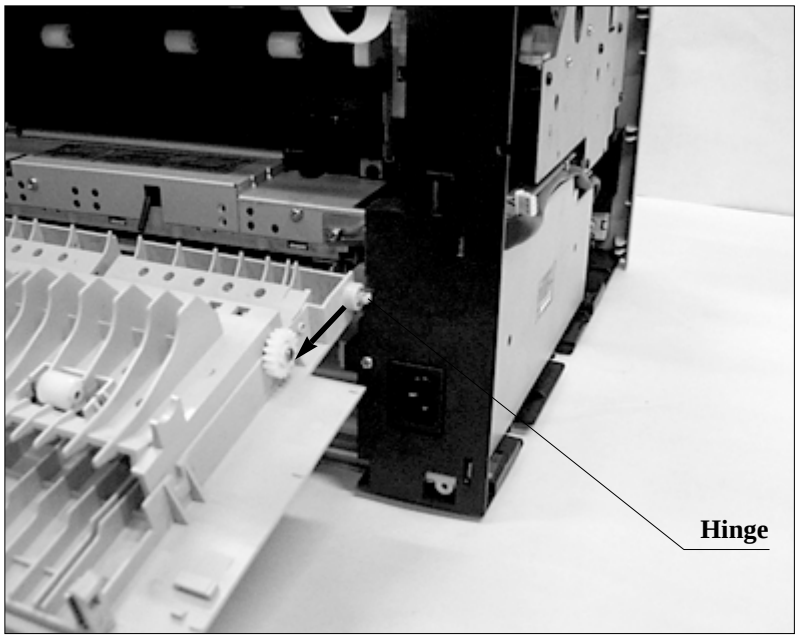


With holding Cover Main, remove the panel wire.

4-3-5. Cover Rear

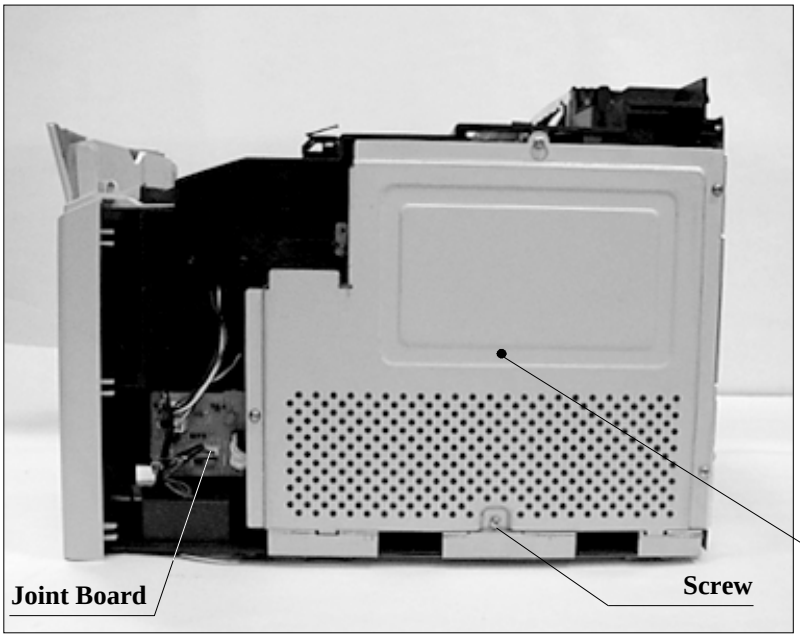


Open the Cover Rear.
Detach the stripe by pushing the stripe.
There is a hook holding the stripe.

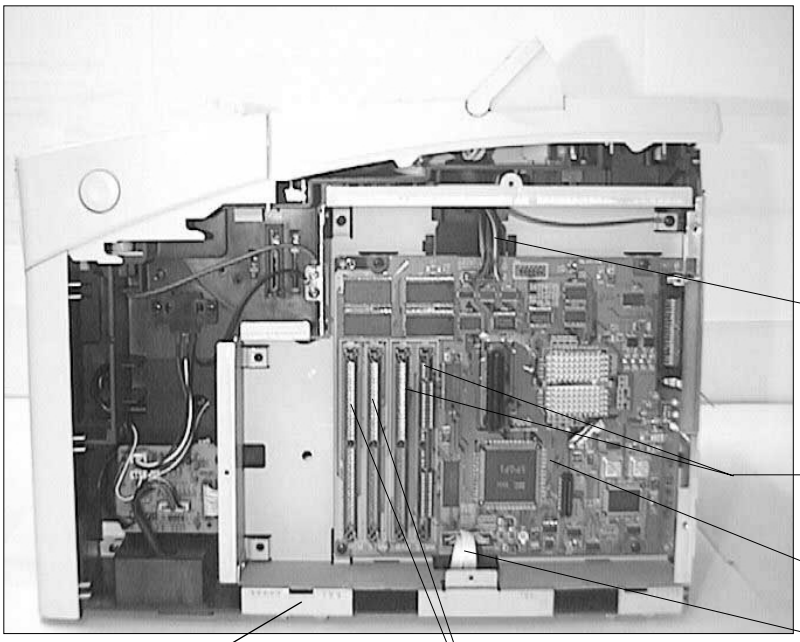


After detaching the stripe from the Cover Rear,
Release the Cover Rear from the hinge.

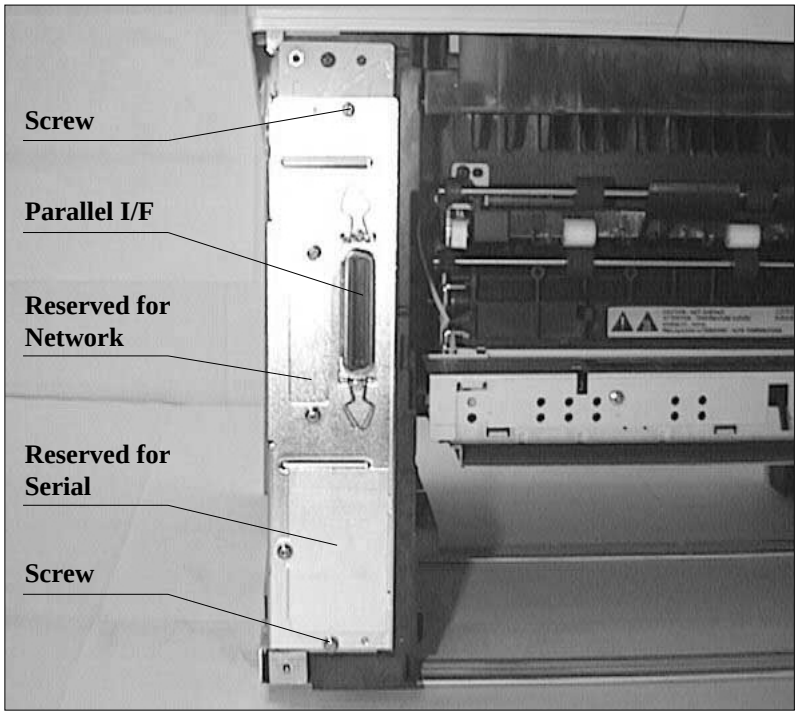
4-4 Video Controller board & Joint board



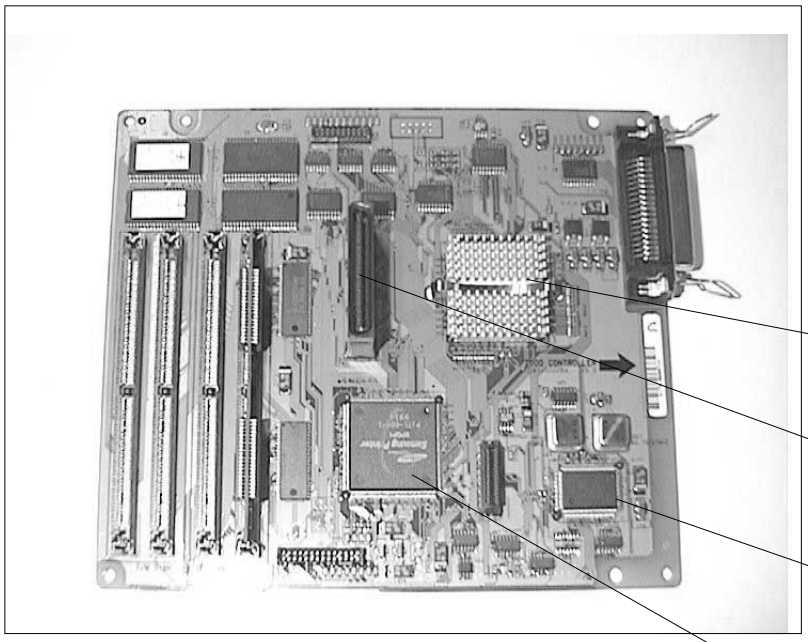
After removing external cabinet, see the 5 screws and you should remove them.
The Shield ICU is important for EMI and protection for Controller.



After removing Shield ICU, you can see the assembled controller.
Unplug the panel cable and engine I/F cable with care and remove the screws from the frame.

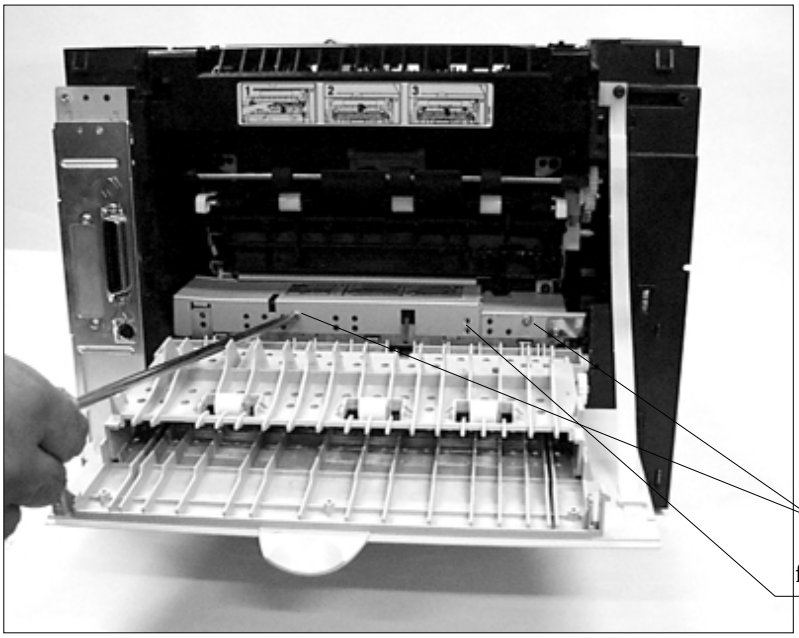


Remove the screws which hold the Bracket ICU to the frame and detach controller from the frame. You can see the Frame ICU.

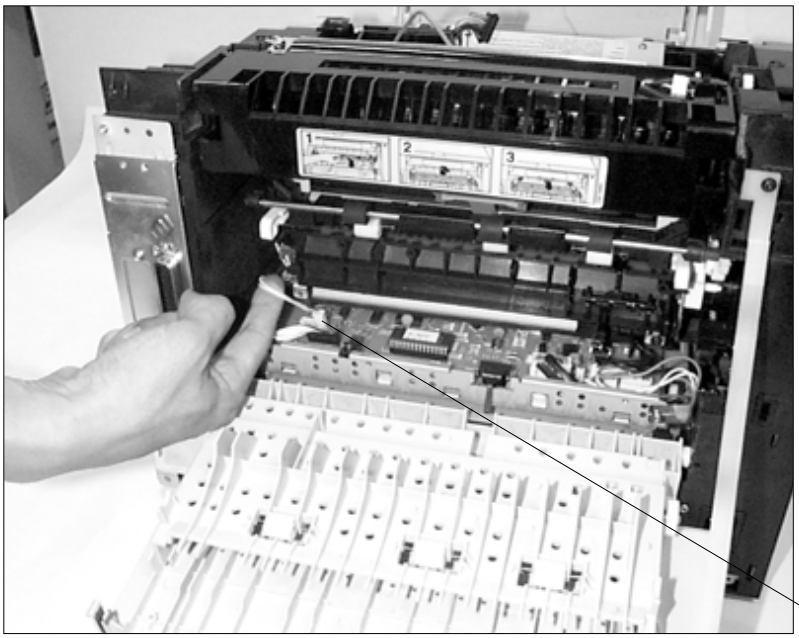


Video Controller Board

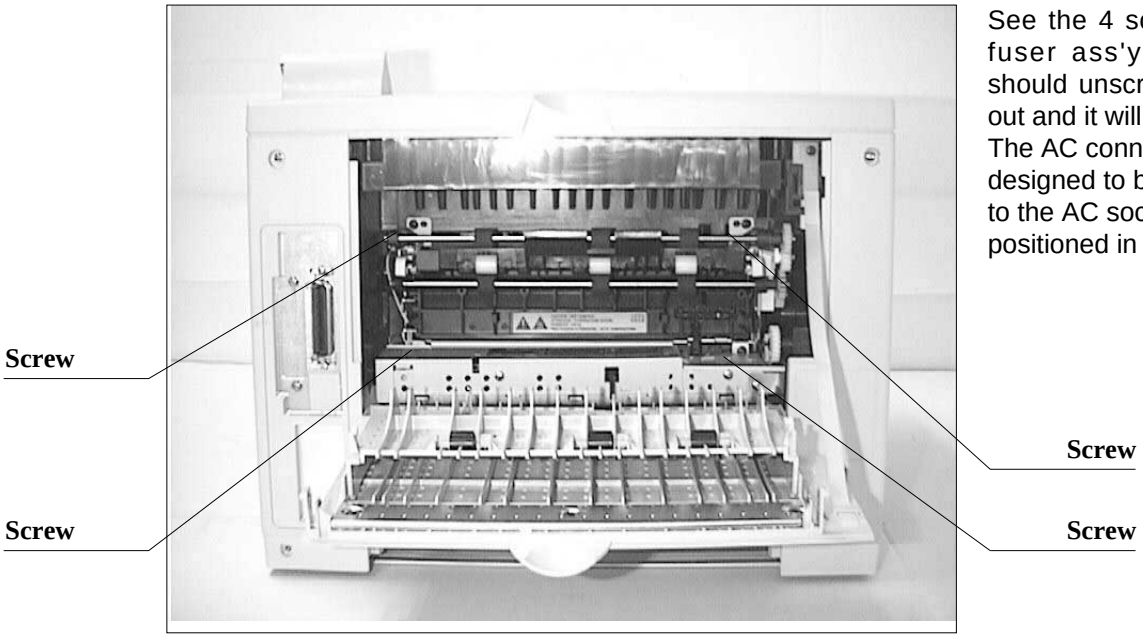
4-5 Fuser Ass'y



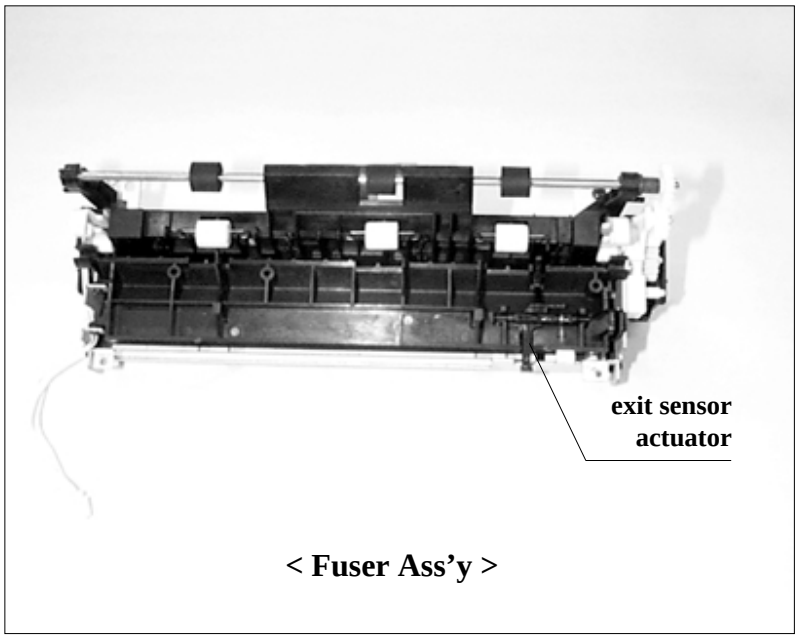
Open the Cover Rear and see the screws and unscrew and remove the Cover pcb.



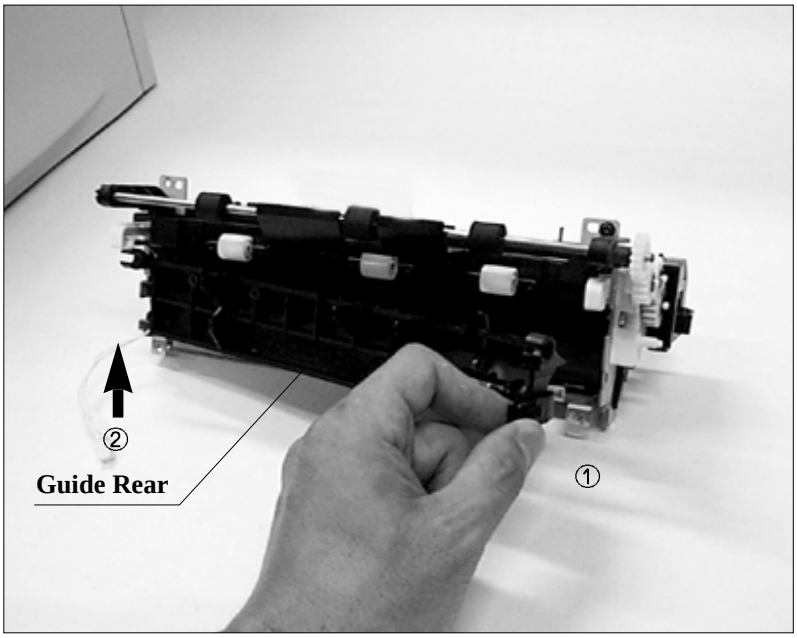
After removing the Cover pcb, unplug the Thermistor connector from the Engine Board.



See the 4 screws which hold the fuser ass'y to the frame. You should unscrew and pull the fuser out and it will be removed.
The AC connector for fuser is designed to be directly connected to the AC socket which is positioned in the frame.

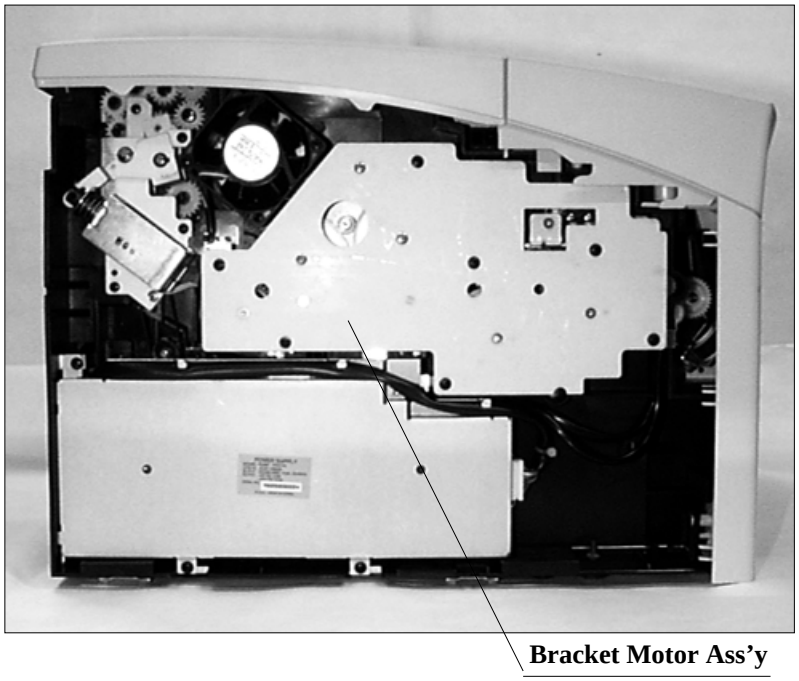


< Fuser Ass'y >

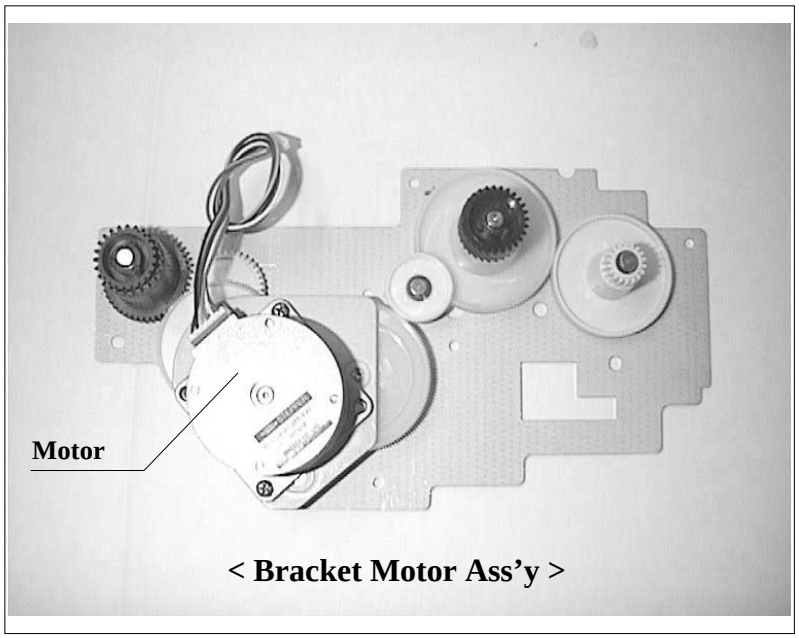


When Jam happens, you can easily remove it by pulling the Guide Rear out like figure. In order to remove Guide Rear, opening the Guide Rear out like figure and pull out hinge of Guide Rear.

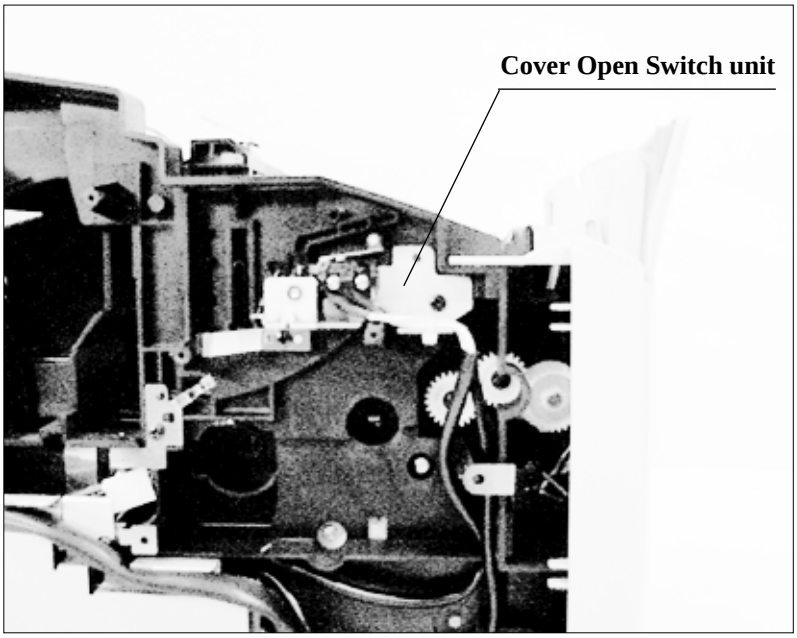
4-6 Bracket Motor Ass'y & Cover Open Switch Unit



Bracket Motor ass'y is located in the right-upper side. Remove 7 black screws and detach the ass'y from the frame and unplug the motor connector from the motor.

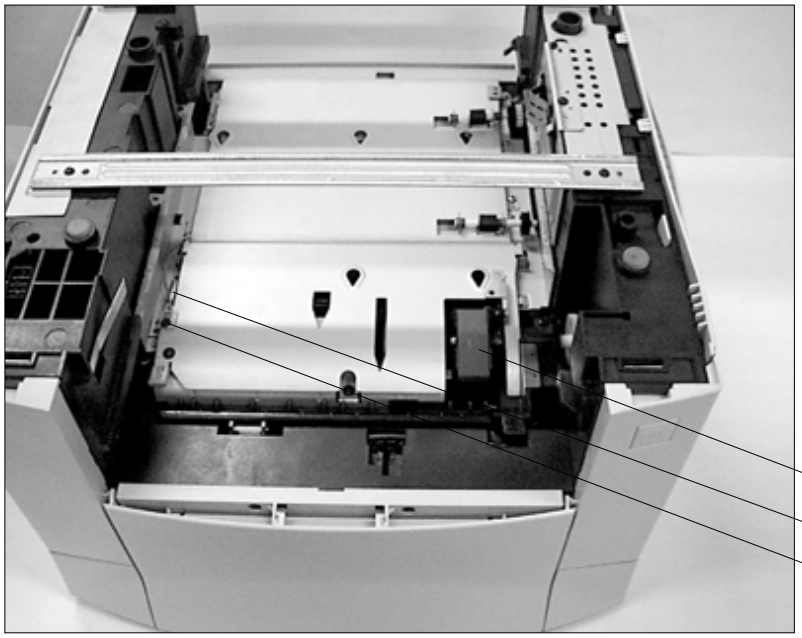


You can see the Bracket Motor ass'y. Motor and several gears are assembled in one gear bracket.

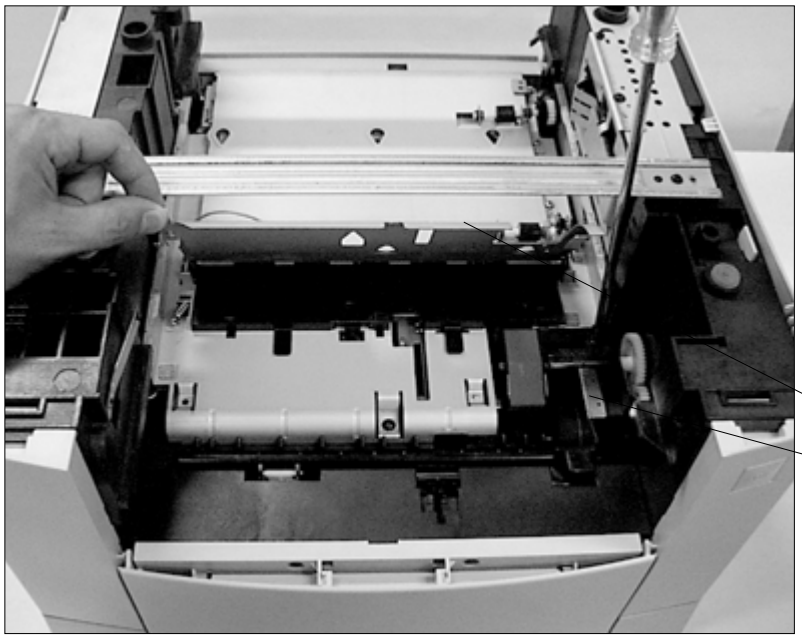


After removing the Bracket Motor ass'y, you can see the Cover Open Switch Unit.
Remove the SMPS.
Refer to SMPS & Bracket
Duplex Ass'y disassembly (4-12)
Detach two Connectors form the SMPS.
Remove 2 screws and detach the unit from the frame.

4-7 Pickup Ass'y

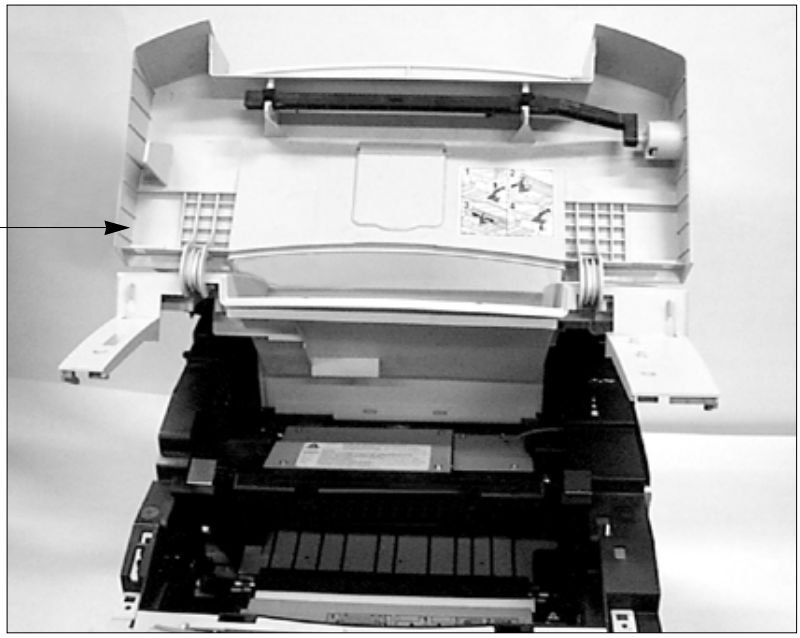


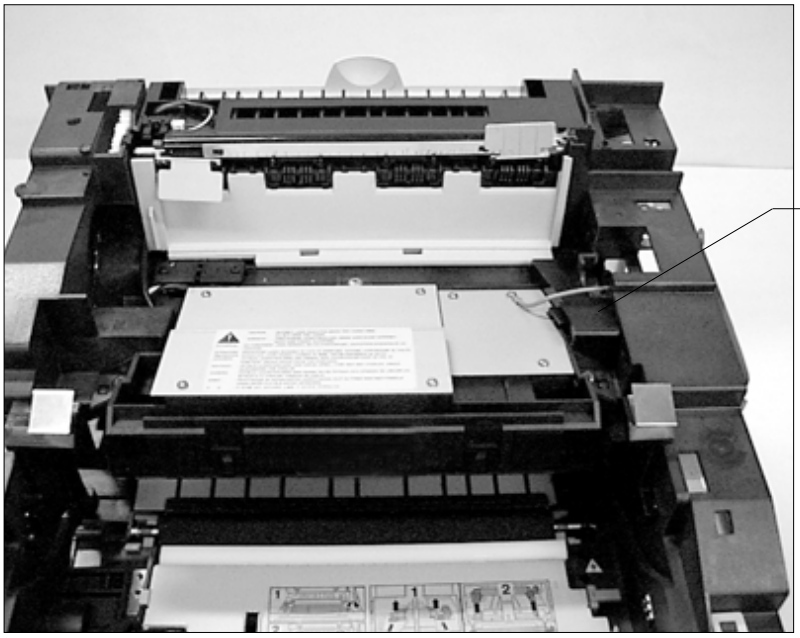
After running about more than 100,000 pages, the pickup ass'y may be needed to be replaced depending on feeding quality.
Remove the screw of Bracket Support and tension spring.



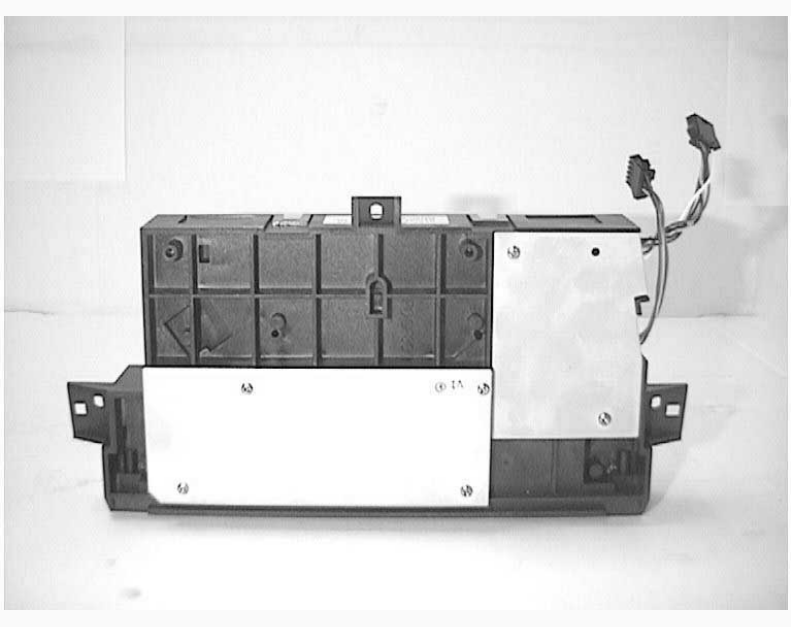
Lift Guide Front Duplex and remove the 3 mounting screws of Pickup Ass'y.

4-8 Laser Scanner Unit



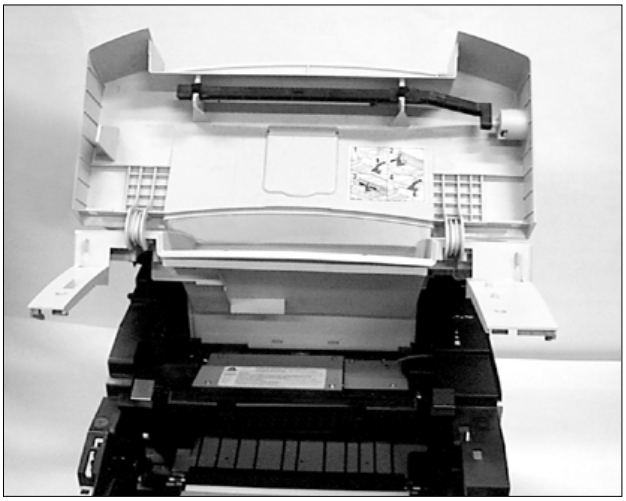


Laser Scanner Unit is located in the upper frame.
In order for LSU disassembling, disassemble the Cover Main, you should take off the left and right cover.
There is wiring protection cover(Cap Wire LSU)for LSU wires.
Remove Cap wire LSU.

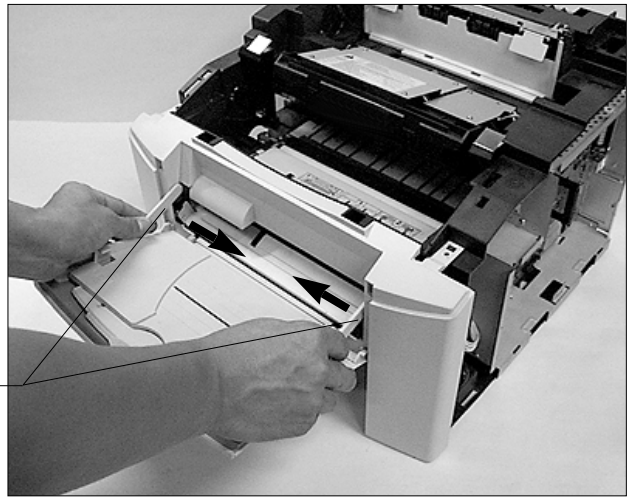


There are two wires for LSU. One is LSU motor and the other is Laser beam control. The wires are wire to wire types. You can easily disconnect the wires. After disconnection, unscrew and remove LSU.

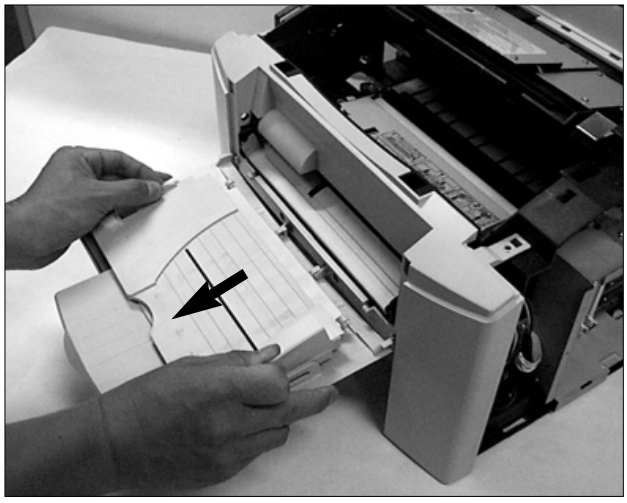
4-9 Multi Purpose Tray



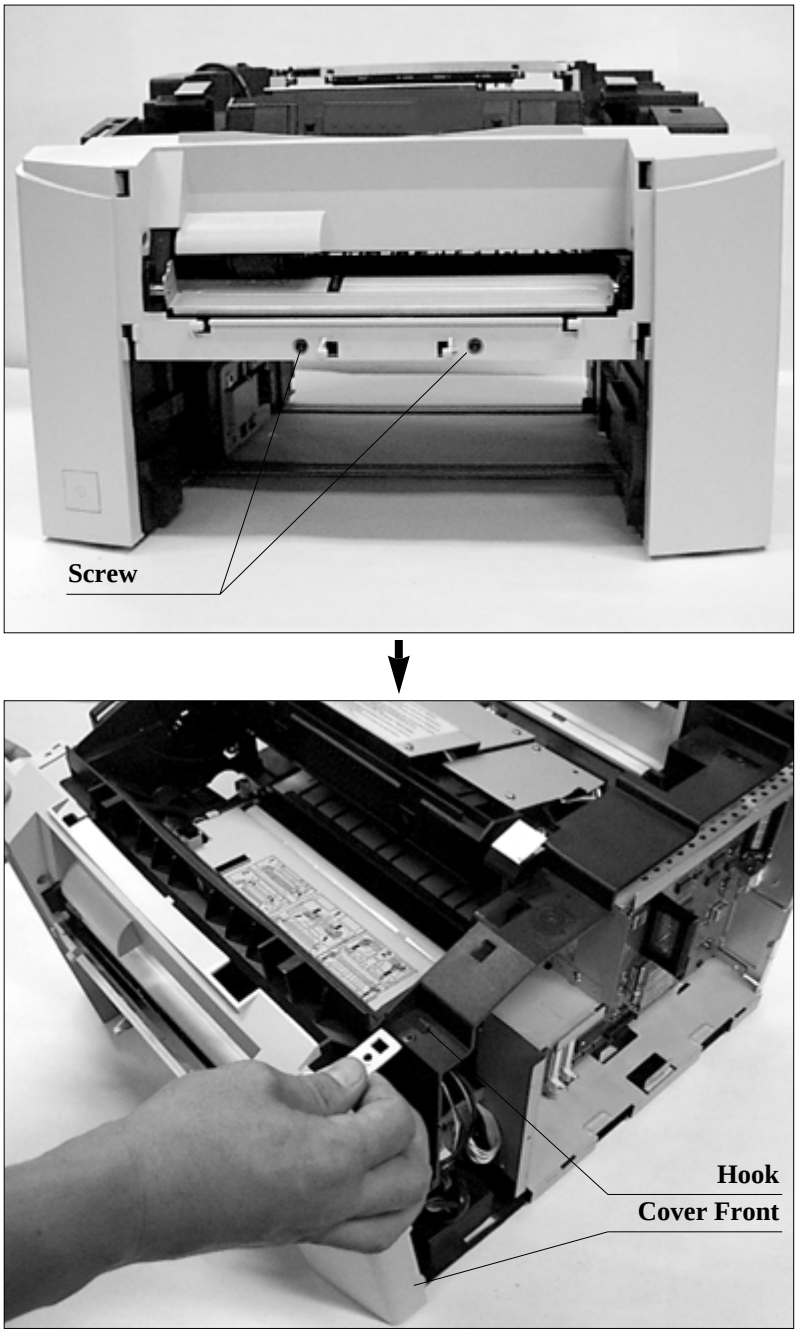
Remove the Cover main.



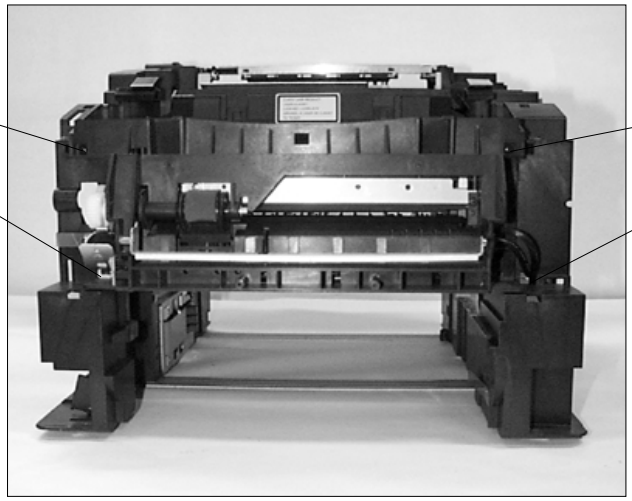
See the Links which hold the MP tray in the both side.
Hold the Links and pull it to the arrow direction.



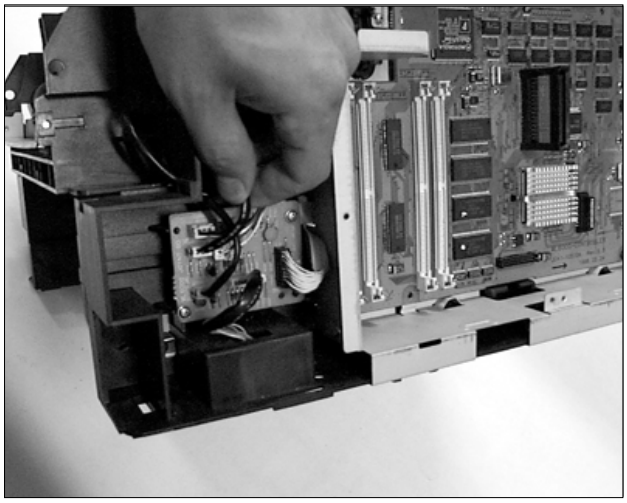
Hold the MP tray and pull it to the arrow direction.



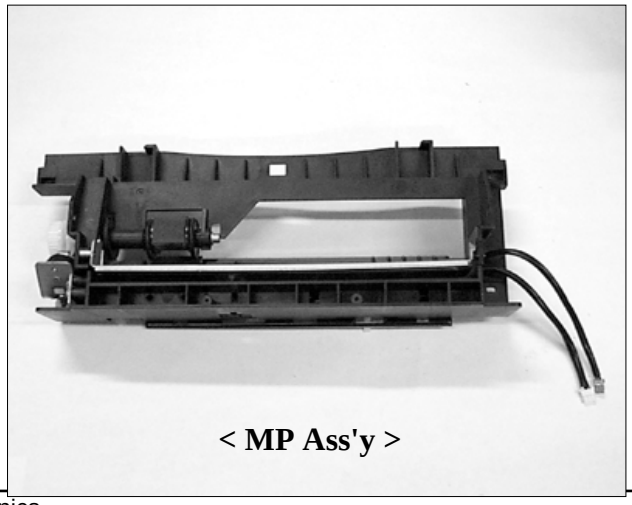
After detaching the Tray MP, see the screws and remove them.
Remove the hook and release the Cover Front by releasing the hook.



After removing Cover Front, detach the MP ass'y by unscrewing 4 screws.

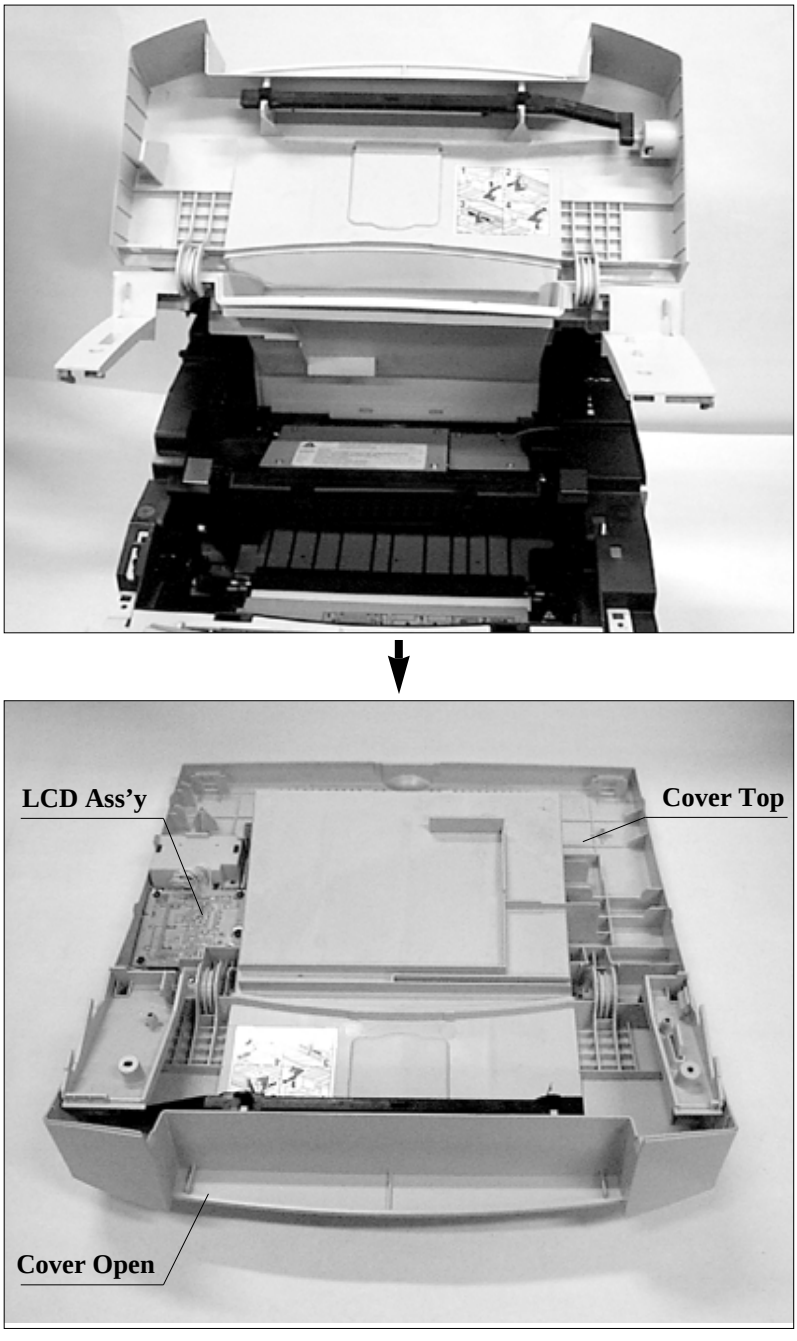


Before detaching MP Ass'y, unplug the MP solenoid and MP sensor connector from the Joint Board.

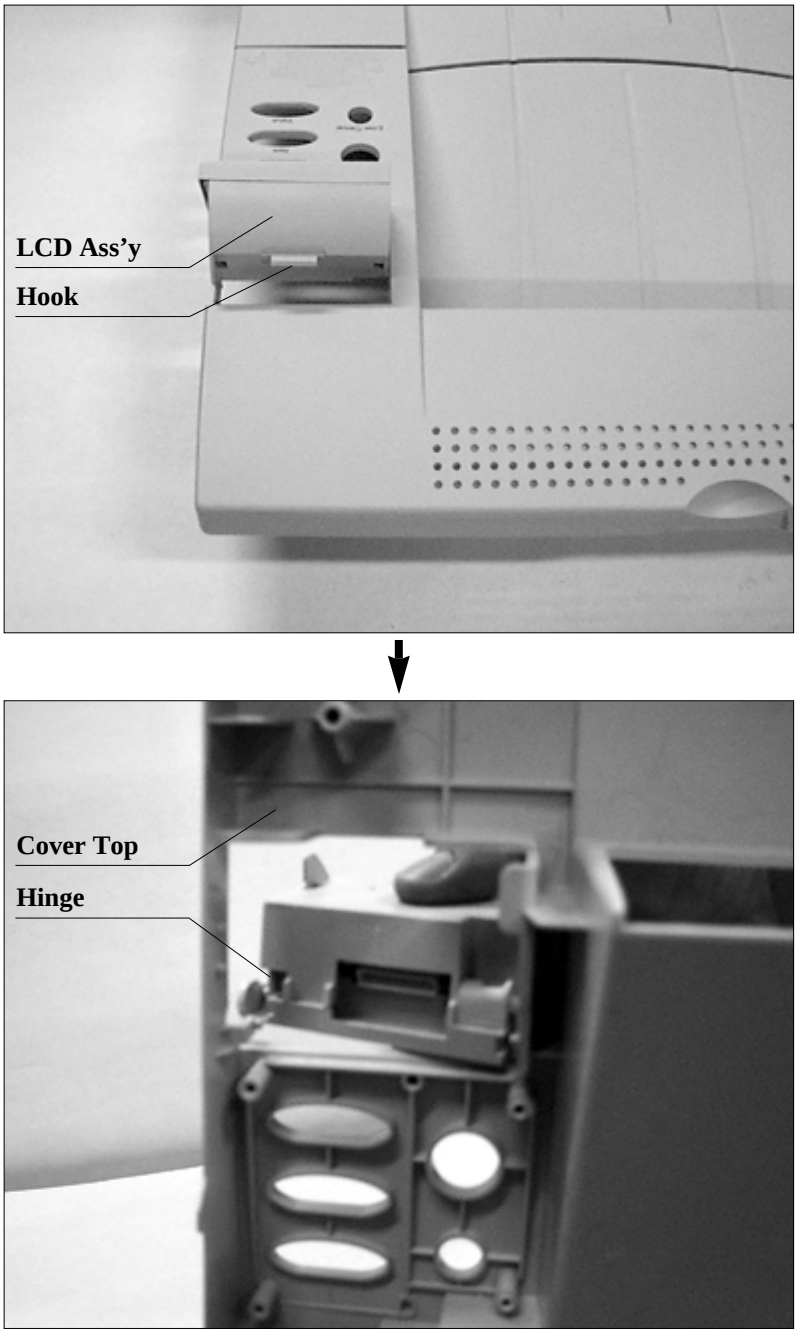


< MP Ass'y >

4-10 Control Panel



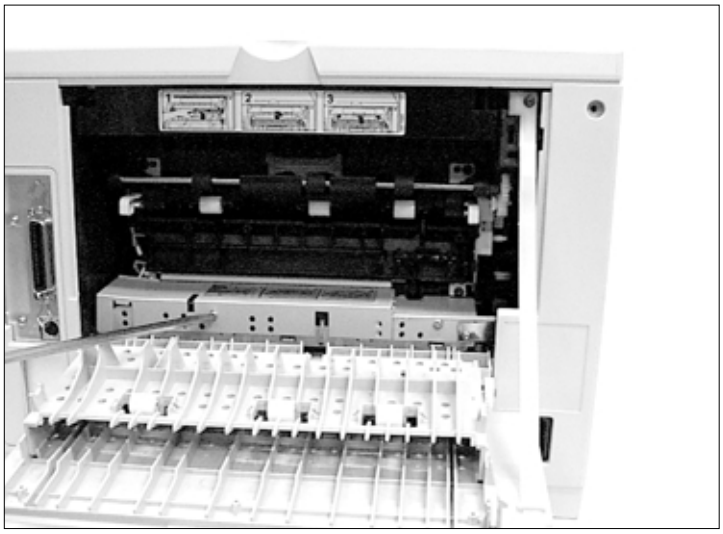
First lift up Cover Main and see the panel wire and disconnect the wire from the panel board. And next step is to remove the panel board which is located in the Cover Top.
Control panel consists of LCD ass'y and Key&LED ass'y.
Remove Key&LED ass'y and remove LCD ass'y.



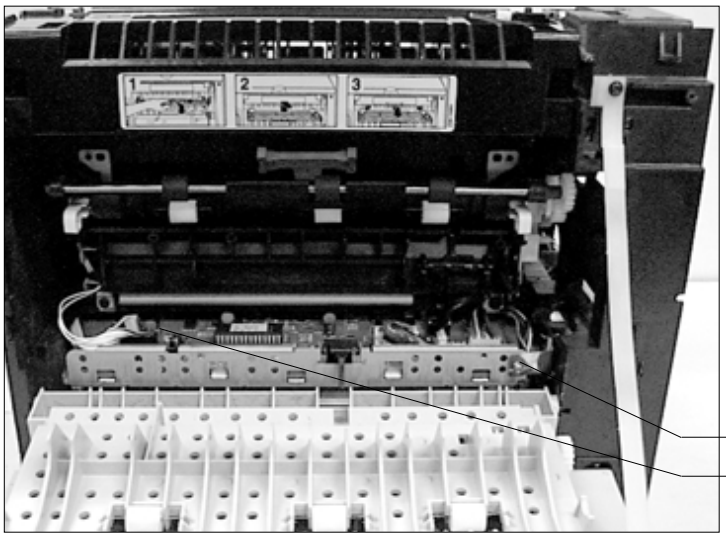
After removing Key&LED ass'y, release the hook of LCD ass'y from Cover Top and see the hinge for LCD ass'y in the cabinet and release them.
You should spread the hinge of LCD ass'y.
But be careful not to damage the hinge.

4-11 Engine Controller Board

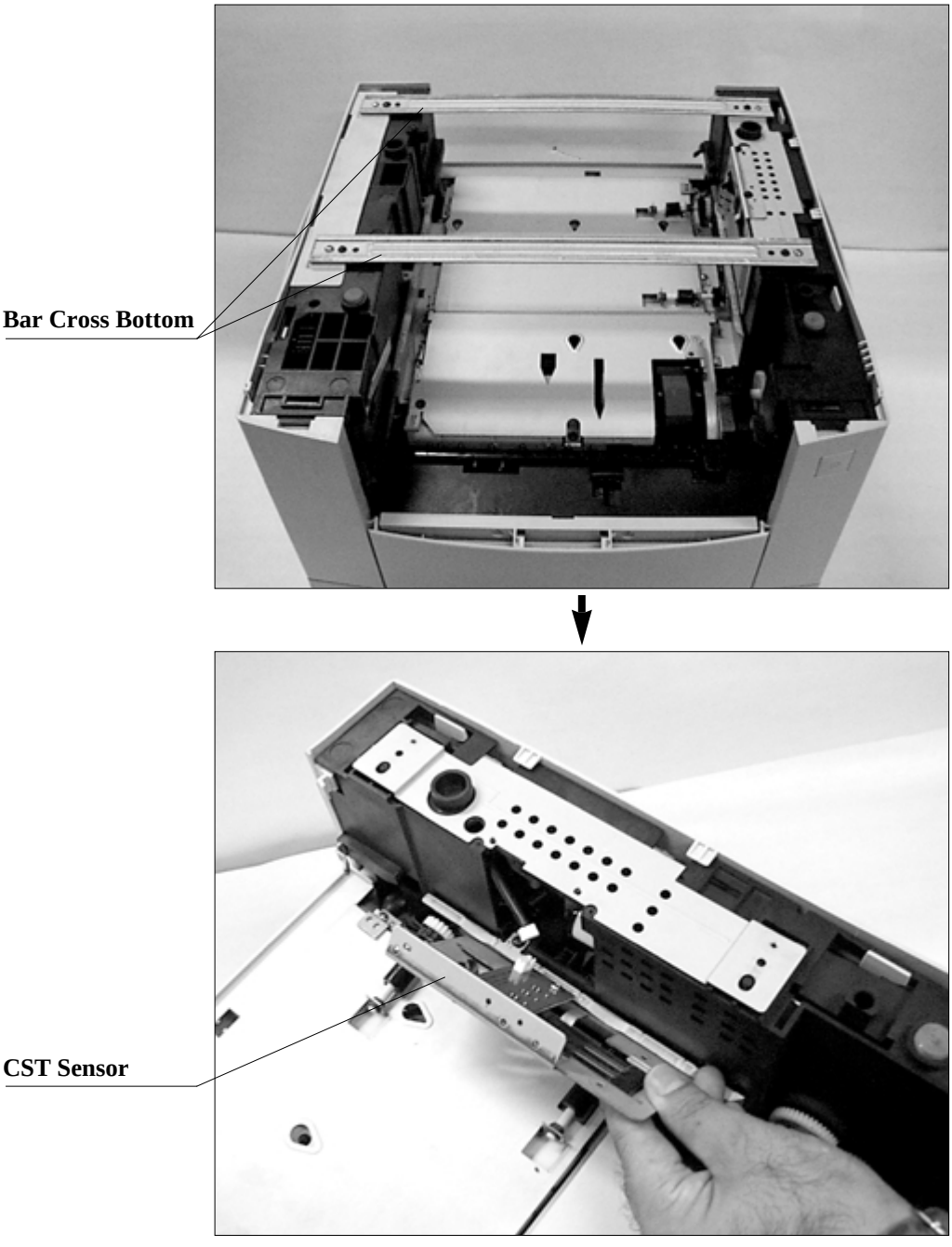
In order for disassembling PCU, the printer should be turned upside down. When turned over, toner may contaminate LSU window. Open the Cover Top and you should insert one paper into the inner like above figure.



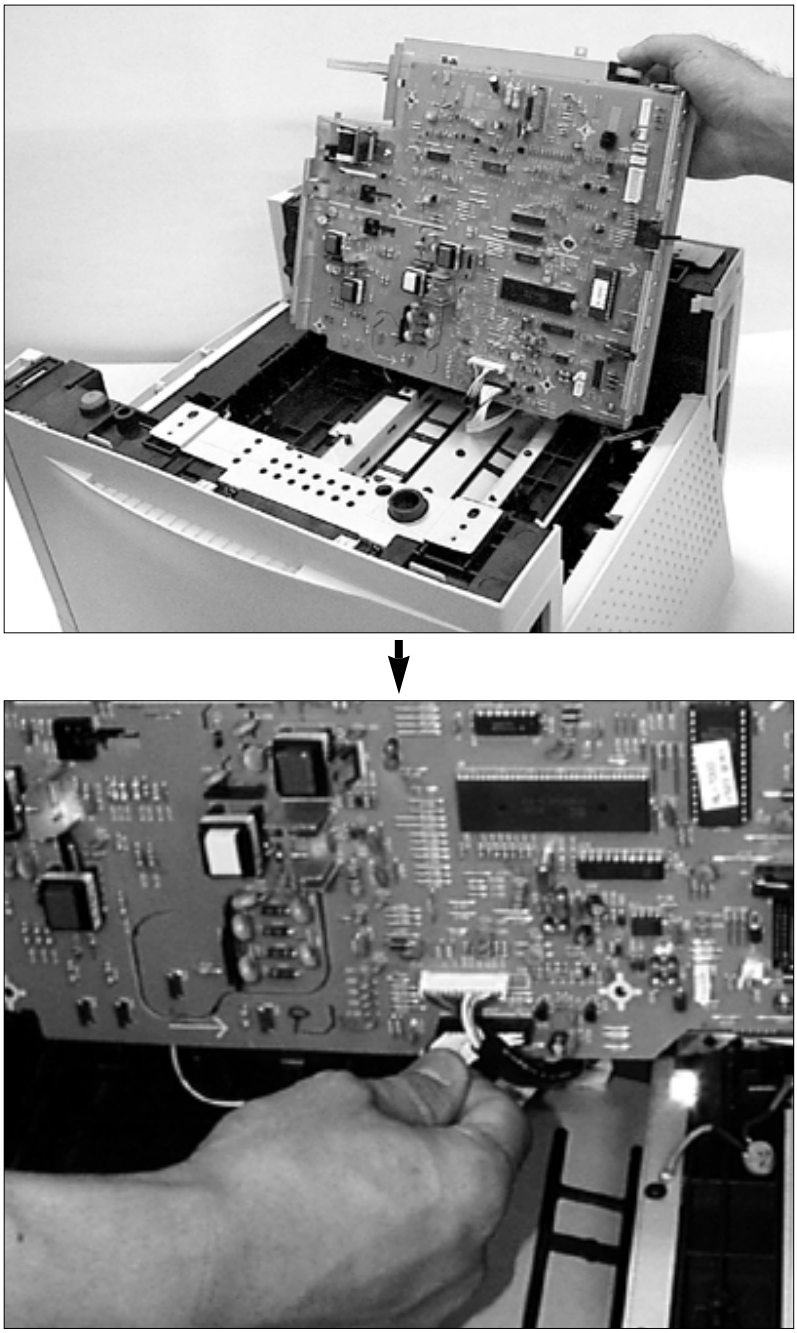
Open the Cover Rear and remove the Cover PCB.



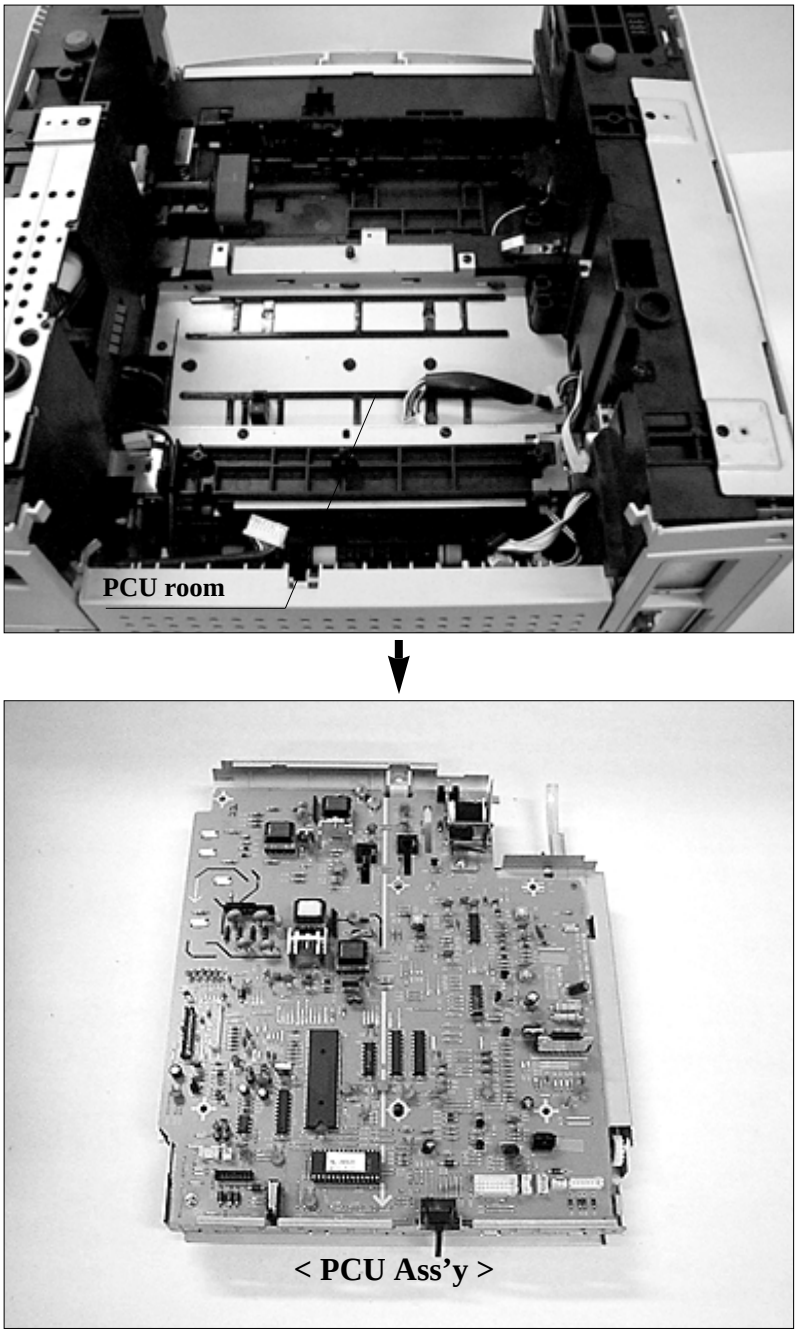
After removing Cover Rear, disconnect all wires from the PCU. and then remove the screw of Ground Shield SMPS, Turn over the printer.



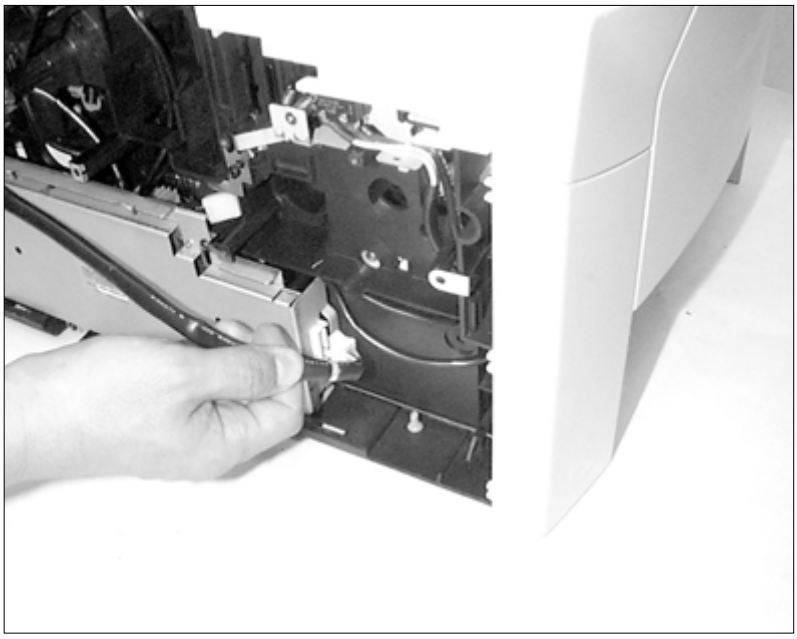
After turning over, remove Bar cross Bottom by unscrewing them 8 screws.
Next remove the CST Sensor and remove the screws in the PCU which are black colored screws.

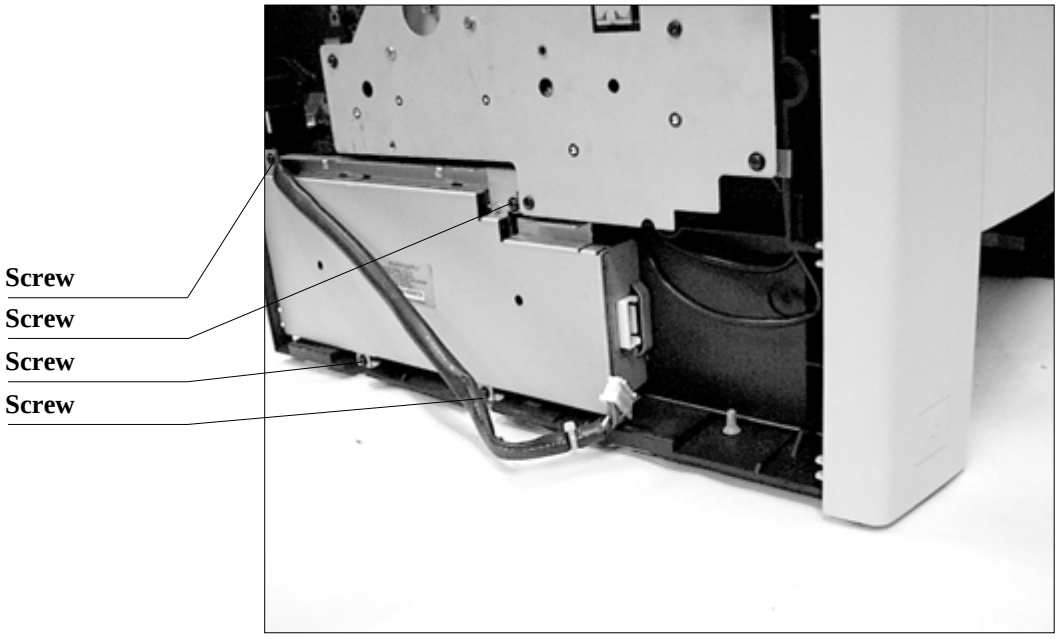


After unscrewing, lift the PCU like above figure. And you can see the connector which are LSU's and 'Video I/F's'. Unplug them with care. Be careful not to be hurt to your hands when you disconnect the wires because the connection is tight and you may pull the connectors strongly.

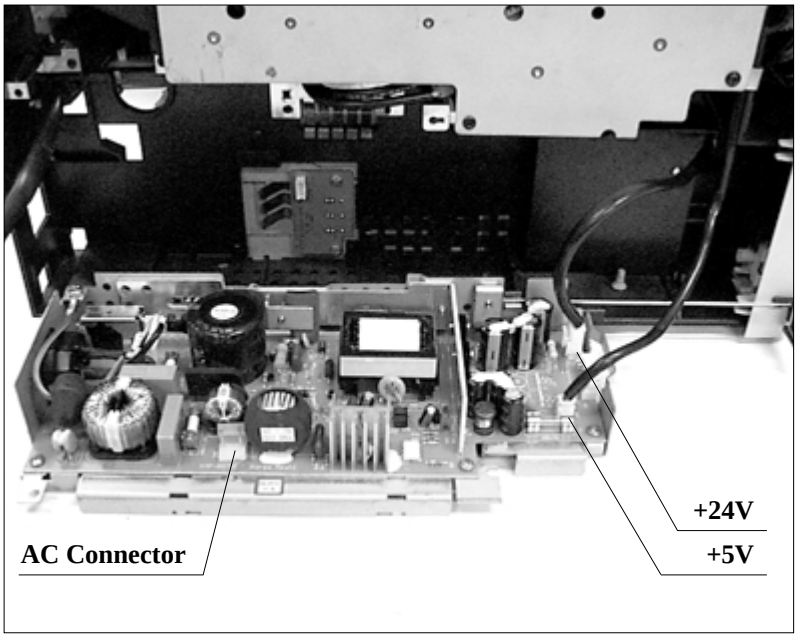


Above is to show the disassembled PCU and Frame. PCU Ass'y has some sensor, some actuator, solenoid and Shield plate and HVPS circuit. Service man could ask the Ass'y or repair parts.

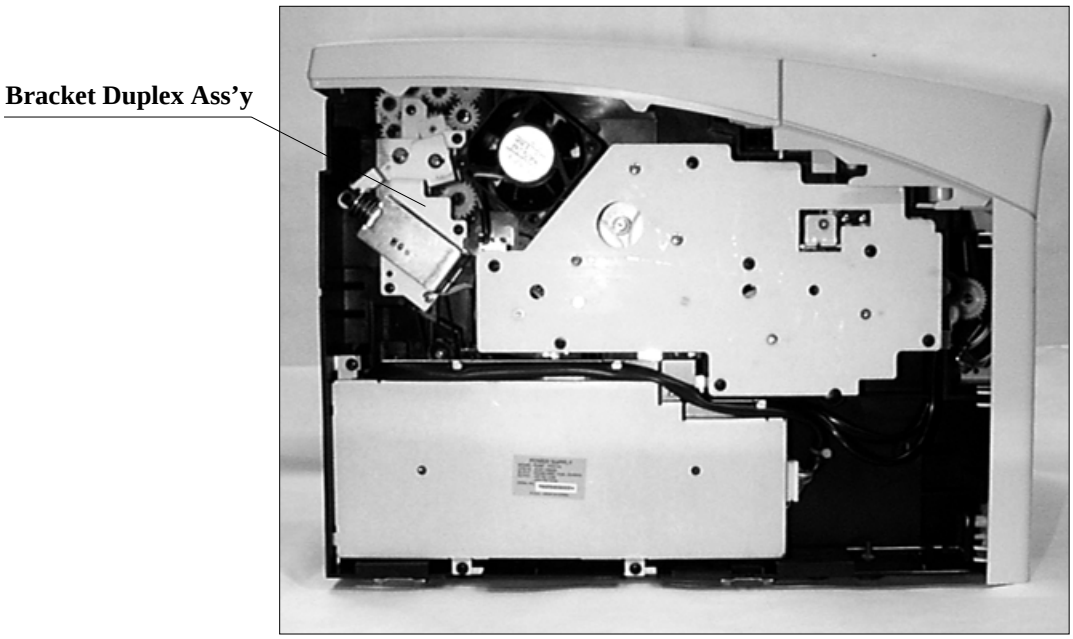




In order to remove SMPS, first remove Cover Left.
Use your left hand to release hook from the frame and slide the Cover Left to backward by use of right hand. After removing Cover Left, you can see the SMPS. Unplug the power connector and release the wire from the wire guide of the SMPS.
Remove four screws and separate SMPS from the frame.
You can see the fuser AC connector and +5V, +24V connector which are connected to the microswitches. Detach the wires from the SMPS.

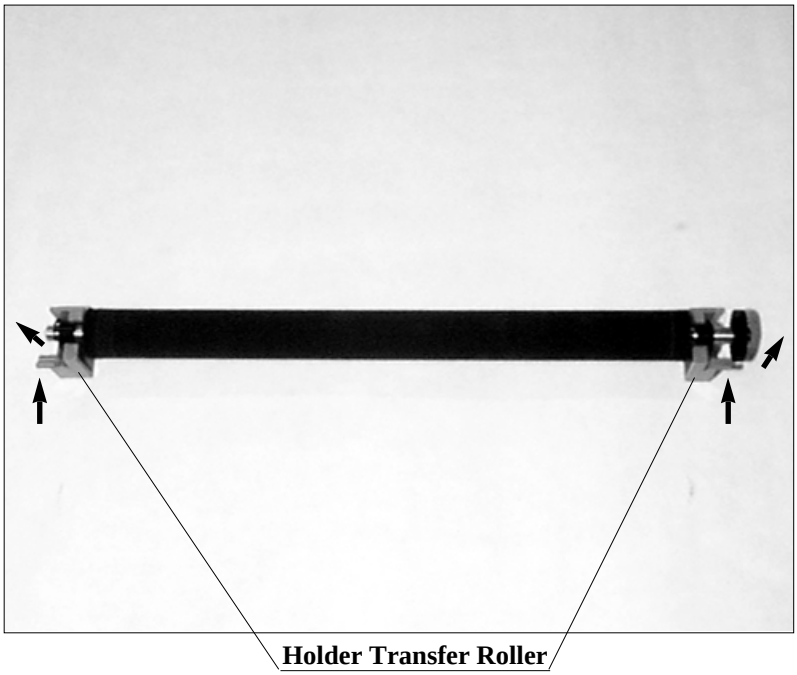


There are 4 connectors to the SMPS. The power connector is +5V and +24V output from SMPS. AC for fuser is AC output from SMPS to the fuser. And there are microswitches which are attached to the upper frame and which are attached to the upper frame and which are shorted when Top cover is closed, namely interlock Switches for +24V for HVPS, motor and for +5V for Laser beam.



The Bracket Duplex Ass'y is located in the left upper side. Remove the screws and detach the ass'y from the Frame.
In order to remove the connector of Solenoid, first remove Engine Controller Board.
Refer to Engine Controller Board disassembly (4-11)

4-13 Transfer Roller Ass'y



Open the Cover Top, you can see colored levers at each side of Transfer Roller, push the levers which is attached in the Holder transfer Roller to release the Ass'y.

5. Troubleshooting

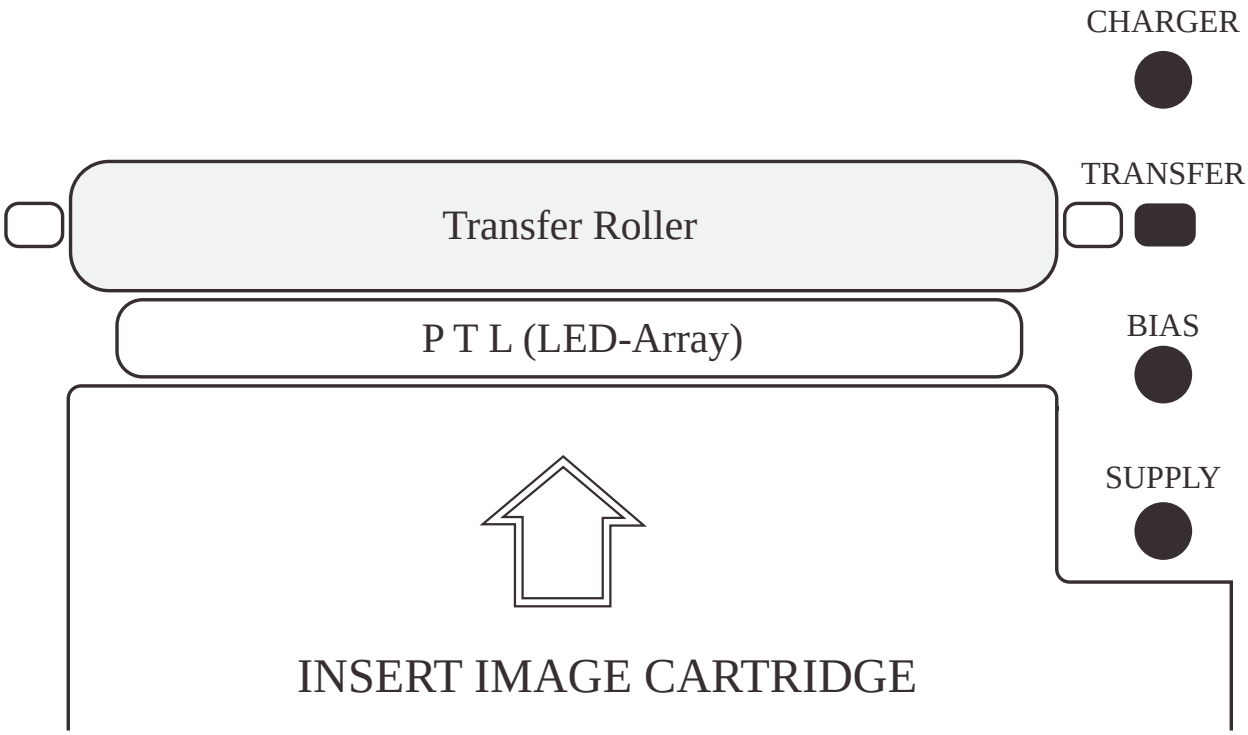
5-1 Print Quality

Error status	Check	Solution
Dark Image	1. Check HVPS output voltage 2. Check terminal contact for HVPS.	1. Refer to HVPS output spec - Replace the engine board - Refer to “4 - 11” 2. Fix the terminal to contact well.
Light Image	1. Check the toner quantity. 2. Check HVPS output voltage 3. Check the terminal contact for HVPS.	1. Replace image cartridge. 2. Refor to HVPS output spec. -Replace the engine board. 3. Fix the terminal to contact well.
Horizontal Density Band.	1. Compare new image cartridge with present one 2. Contamination of Transfer Roller	1. Replace image cartridge 2. Replace transfer roller
Print Contamination	1. Contamination of Fuser Unit 2. Contamination of Heat roller 3. Contamination of OPC Drum	1. Clean Fuser Unit or change If not improved, replace it. 2. Clean Heat Roller - Refer to “4-5” 3. Clean OPC Drum. If not improved, replace image cartridge.
Toner on Backside of printer page	1. Contamination of Fuser Unit 2. Contamination of transfer Roller 3. Contamination fo paper path	1. Clean Fuser Unit. If not improved, replace it. - Refer to “4-5” 2. Replace Transfer Roller 3. Remove the contamination on paper path.
Back Ground	1. Check HVPS output voltage 2. OPC Drum contamination or image cartridge life 3. Check the contamination of PTL lens 4. Check the terminal contact for HVPS. 5. Check the contamination fo transfer roller.	1. Refer to HVPS output spec - Replace the engine board 2. Replace the image cartridge 3. Clean the lens with a soft dry cloth 4. Fix the terminal to contact well. 5. Relpace Transfer Roller
Vertical Black Streak and band	1. OPC Drum scar 2. OPC Drum damage	1. Clean OPC Drum 2. Replace image cartridge
Vertical White Streak	1. Contamination of LSU window	1. Clean LSU window 2. If not improved, replace image cartridge
Partial Black Image (periodic)	1. OPC Drum scar or particle 2. Heat roller scar or particle 3. Develope roller scar or particle 4. Charge roller scar or particle	1. Clean OPC Drum & roller 2. Cleaning heat roller 3. Clean the develope roller. If not improved, replace image cartridge. 4. Clean the charge roller. If not improved, replace image cartridge.
Partial White Image (not periodic)	1. OPC Drum scar or particle 2. Check the cartridge life	1. Clean OPC Drum 2. Replace image cartridge

Error status	Check	Solution
No image (all white)	1. Check HVPS voltage 2. Check the GND OPC contact. - Contact among GND OPC contact points. - Image cartridge. - GND OPC terminal on frame - GND OPC terminal on the engine board - Confirm the voltage between GND-OPC and GND-Frame. : -130V approx 3. Check LSU operation. - Refer to DCU control “05” 4. Compare new video board with present one. 5. Toner empty	1. Refer to HVPS output spec. - Replace the engine board 2. Fix contact points to fit well. 3. Replace the LSU. -Refer to “4-8” 4. Replace the video board. 5. Replace the image cartridge.
All Black Image	1. Check the charger voltage 2. Check the terminal contact 3. Compare new video board with present one	1. Refer to HVPS output spec - Replace the engine board 2. Replace terminal 3. Replace video board

5-2 HVPS Output Spec

DCU	CODE NO.	HVPS OUTPUT	REMARK
CHARGER	"01"	- 1.55 KV	1. Turn off the printer 2. Open the rear cover and disassemble the cover-shield. 3. Connect the DCU on engine board and close the rear cover. 4. Open the top cover. 5. Remove image Cartridge. 6. Push the Cover Open Switch 7. Select the Diagnostic mode and measure HVPS output. *Recommanded Test Equipment - DVM -High Voltage Probe
TRANSFER "-"	"02"	-1KV~ -1.4KV	
TRANSFER "+"	"03"	+3.05 KV	
BIAS	"04"	- 475 V	
SUPPLY	"04"	- 675 V	
OPC GND	_	- 130 V	



5-3 Malfunction

Error status	Check	Solution
No Power	1. Check FUSE - F1(8A), F2(5A) OPEN. 2. Check FUSE. - F3(250V/3A) OPEN.	1. Replace SMPS. - Refer to “4-12” 2. Measure the resistance +5V and GND. (Engine board CN5-pin6 and CN5-pin9). If find the short circuit, replace the Engine board.
Internal Error 11 (Fuser Error)	1. Check Fuser unit - Thermostat open - hallogen lamp defect Normal : 110V version - 2~3Ω 220V version - 5~6Ω 2. Check themistor wire assembly defect. Normal : 2~400kΩ 3. Check SMPS - CN2 conection on SMPS - Fuse(F2) open - Defect of component related to Fuser control. 4. Check Engine Board - CN7 connection - Fuser control line: Cn5-2 level (Lamp on : 0.2V, Lamp off:24V)	To disassemble the Fuser unit, refer to “4-5”. 1. If the thermostat of the fuser unit is opened. replace it. 2. If the thermistor wire of the fuser unit is defected, replace it. 3. If the fuser unit is normal, replace SMPS. 4. If not normal operation after replacing it, replace the engine board.
Cover open	Check the Cover Open operation 1. Cover open unit defect 2. Cable damage and connection 3. Engine board defect	1. Replace cover open Unit -Refer to “4-6” 2. Replace cover open switch assembly, and connect properly. 3. Replace the engine board.

Error status	Check	Solution
Jam 2 "Paper is stopped just after exit sensor"	1. Check the exit sensor. - Refer to DCU mode "08" 2. Check the exit sensor actuator. 3. Check the Exit Roller. 4. Check the Cover Rear. 5. Check the Contamination of Fuser Unit	1. Replace Exit sensor. - Refer to "4-11" 2. Replace Exit sensor actuator. - Refer to "4-5, 6-6" 3. Replace Exit Roller. - Refer to "4-3, 6-1" 4. Replace Cover Rear. - Refer to "6-1" 5. Replace or Clean Fuser Unit - Refer to "4-5, 6-6"
Duplex Jam 1	1. Check the operation of Duplex Clutch - Refer to DCU mode "12" 2. Check the Duplex sensor 1. - Refer to DCU mode "07" 3. Check the Duplex sensor 1 actuator. 4. Check the Cover Rear. 5. Check the bracket duplex unit 6. Check the duplex solenoid. The resistance of duplex solenoid: 40~50 ohm.	1. Replace Duplex Clutch. - Refer to "4-6" 2. Replace the DS1 on Engine Board. 3. Replace Duplex sensor 1 actuator. - Refer to "4-11" 4. Replace Cover Rear. - Refer to "6-1" 5. Replace bracket duplex unit - Refer to "6-8" 6. Replace duplex solenoid ass'y.
Duplex Jam 2	1. Check the Duplex sensor 2. - Refer to DCU mode "07" 2. Check the Duplex sensor 2 actuator. 3. Check the Gear of shield pcb - Check all the gear for correct installation	1. Replace the DS2 on Engine board. 2. Replace Duplex sensor actuator. 3. Replace Gear of shield pcb - Refer to "4-11, 6-7"
PTL Error (Pre Transfer Lamp)	1. Check the LED Array. 2. Check the cable connection or wire defect. 3. Check Joint board.	1. Replace LED Array. - Refer to "6-2" 2. Replace harness or reconnection. 3. Replace Joint board. - Refer to Disassembly
Toner Empty	1. Check image cartridge life 2. Check Toner sensor contact. 3. Check Joint board 4. Compare new image with present on.	1. Replace image cartridge. 2. Replace harness or reconnection. 3. Replace Joint board. - Refer to "4-4" 4. Replace image cartridge.
OUT-BIN Full	1. Check OUT-BIN sensor. - Refer to DCU mode "09" 2. Check OUT-BIN sensor actuator. 3. Check cable connection or wire defect	1. Replace OUT-BIN sensor. 2. Replace OUT-BIN sensor actuator. 3. Connect the cable correctly or replace the cable.
Internal Error 20 (Engine Error)	1. Check the Cable between Engine and Video controller. (Engine board CN10 ➔Video controller board J11.) 2. Engine board defect.	1. Connect the cable correctly or replace the cable. - Refer to "4-4" 2. Replace Engine board.

Error status	Check	Solution
Internal Error 10 (Scanner Error)	1. Check the DC supply for laser scanning unit 2. Check laser scanning unit - Refer to DCU mode “05” 3. Check the cable connection and defect 4. Engine board.	1. If +5Vs for laser diode isn’t supplied. check the cover switch assembly for +5Vs and fix it, 2. If the DC power supply for laser scanning unit has normal operation, replace the laser scanning unit 3. Replace cable and connect properly. 4. If not normal operation after replacing it, replace the engine board.
Jam 0 1. Paper is not exitted from cassette 2. Paper is stopped before feed sensor.	**1. 1st cassette feeding** 1) Check the operation of Pick-up Clutch - Refer to DCU mode “06” 2) Check PAD of Pickup roller. 3) Check the Gear of Pickup Unit. 4) Check paper installation in cassette	 1. Replace the Pick-up solenoid on Engine Board. - Refer to “4-11” 2. Replace PAD. - Refer to “4-7, 6-5” 3. Replace Pickup Unit Gear. - Refer to “4-7, 6-5” 4. Install paper properly.
	2. Multi purpose feeding 1) Check the operation of multi purpose Clutch - Refer to DCU mode “13” - Check MP solenoid. The resistance of MP solenoid 70~80Ω 2) Check PAD of Pickup roller 3) Check Joint board Measure the CN503-2pin 4) Check the Gear of multi Purpose Pickup Unit 5) Check cable connection or wire defect.	 1. Replace MP solenoid. If not normal operation after replacing it, replace the engine board. - Refer to “4-11”. 2. Replace PAD - Refer to “4-9, 6-4” 3. Replace Joint board. - Refer to “4-4” 4. Replace Pickup Unit Gear. 5. Connect the cable correctly or replace the cable.
	3. Second cassette feeding 1) Check Pickup Clutch for SCF. - The resistance of SCF solenoid: 70~80Ω 2) Check PAD of Pickup roller 3) Check the Gear of pickup Unit 4) Check paper installation in cassette. 5) Check cable connection or wire defect.	 1. Replace the pick-up clutch for SCF. If not improved, replace SCF board 2. Replace PAD. - Refer to “6-11” 3. Replace Pickup Unit Gear. - Refer to “6-11” 4. Reinstiall paper properly. 5. Connect the cable correctly, or replace the cable.
Jam 1 “Paper is stopped on feed sensor”	1. Check the Feed sensor. - Refer to DCU mode “08” 2. Check the Feed Sensor actuator 3. Check the paper installation in cassette.	1. Replace Feed Sensor. - Refer to “4-11” 2. Replace Feed Sensor actuator. - Refer to “4-11, 6-2” 3. Reinstall paper properly.

Error status	Check	Solution
Main Motor	- Refer to DCU mode “00” 1. Check the supply voltage. (+24 Vdc) Engine board CN1 -2,5 pin 2. Check the Motor cable for cuts or pinched wiring. 3. Check the resistance for Motor between pin No. 1 to 3(4 to 6) The resistance of motor : 3Ω approx. 4. Check the Engine board. 5. Check Gear of Motor Drive Unit. - Check all the gear for correct installation.	1. Replace to cover open unit. 2. Replace cable 3. Replace Motor. 4. Replace Engine board. 5. Replace Motor Drive Unit - Refer to “4-6, 6-9”
Paper Empty	**1) 1’st Cassette Feeder** 1. Check the paper empty sensor - Refer to DCU mode “07” 2. Check the paper empty sensor actuator.	1. Replace the paper empty sensor on Engine board. 2. Replace paper empty sensor actuator.
	2) Multi Purpose Feeder 1. Check the paper empty sensor for MP. - Refer to DCU mode “07” 2. Check the MP paper empty sensor actuator.	1. Replace MP sensor assembly. 2. Replace MP paper empty sensor actuator. If not improved, replace the engine board
	3) Second Cassette Feeder 1. Check the paper empty sensor for SCF - Refer to DCU mode “07” 2. Check the paper empty sensing actuator for SCF.	1. Replace the paper empty sensor on S.C.F board. 2. Replace MP paper empty sensor actuator.

5-4 .Connector Pin Assignment

5-4-1. Engine Board Connector Pin Assignment

CONNECTOR	PIN-NO	DESCRIPTION	IDLE	ACTIVE	IN/OUT
CN1 MOTOR	1	MOTOR_PB*	+24V	PULSE	O
	2.5	+24V	+24V	+24V	-
	3	MOTOR_PB	+24V	PULSE	O
	4	MOTOR_PA*	+24V	PULSE	O
	6	MOTOR_PA*	+24V	+24V	O
CN3 DUPLEX	1	+24V	+24V	+24V	O
	1	D_CLUTCH	+24V	L	-
CN2 FAN	1	+24V	+24V	+24V	-
	2	NC	NC	NC	-
	3	FAN	+24V	L	O
CN4 CASSETTE BOARD	1	CAST_SENS1	H	L	I
	2	CAST_SENS2	H	L	I
	3	CAST_SENS3	H	L	I
	4	DGND	DGND	DNGD	-
CN5 SMPS	1	+24VS2	+24V	+24V	-
	2	FUSERON	+24V	L	O
	3,5,7	AGND	AGND	AGND	-
	4	+5Vs	+5V	+5V	-
	6,8,10	+5V	+5V	+5V	-
	9,11,12	DGND	DGND	DGND	-
	13,14,15,16	+24VS2	+24V	+24V	-
CN6 JOINT BOARD INTERFACE	1,2,3	+5V	+5V	+5V	-
	4	MP_CLUTCH	L	0.7V	O
	5	+5Vs	+5V	+5V	-
	6	Q_LAMP	L	0.7V	O
	7,9	+24VS2	+24V	+24V	-
	8	SCF_READY	H	L	I
	10	STS_SCF	PULSE	PULSE	I
	11,13	AGND	AGND	AGND	-
	12	MP_PAPER	H	L	I
	14	TONER	H	L	I
	15,17	DGND	DGND	DGND	-
	16	CMD_SCF	PULSE	PULSE	O
	18	OPT_CLK	PULSE	PULSE	O
CN8 THERMISTOR	1	THERMISTOR	-	-	-
	2	THERMISTOR	-	-	-
CN7 DCU	1	+5V	+5V	+5V	-
	2	DCU_DATA	PULSE	PULSE	I/O
	3	DCU_CLK	CLOCK	CLOCK	O
	4	DGND	DGND	DGND	-

5-4-2. Joint Board Connector Pin Assignment

CONNECTOR	PIN-NO	DESCRIPTION	IDLE	ACTIVE	IN/OUT
CN501 JOINT BOARD INTERFACE	1,2,4	+5V	+5V	+5V	-
	3	MP_CLUTCH	L	0.7V	O
	5	Q_LAMP	L	0.7V	O
	6	+5Vs	+5V	+5V	-
	7	SCF_READY	H	L	I
	8,10	+24VS2	+24V	+24V	-
	9	STS_SCF	PULSE	PULSE	I
	11	MP_PAPER	H	L	O
	12,14	AGND	AGND	AGND	-
	13	TONER	H	L	I
	15	CMD_SCF	PULSE	PULSE	O
	16,18	DGND	DGND	DGND	-
	17	OPT_CLK	PULSE	PULSE	O
CN503 SCF INTERFACE	1	+5V	+5V	+5V	-
	2	AGND	AGND	AGND	-
	3	+24V	+24V	+24V	-
	4	STS_SCF	PULSE	PULSE	O
	5	CMD_SCF	PULSE	PULSE	I
	6	OPT_CLK	PULSE	PULSE	I
	7	SCF_READY	H	L	O
	8	DGND	DGND	DGND	-
CN502 MP_CLUTCH	1	+24V	+24V	+24V	-
	2	MP_CLUTCH	+24V	L	O
CN504 Q_LAMP	1	+5V	+5V	+5V	-
	2	Q_LAMP	+5V	L	O
CN505 MP_SENSOR	1	MP_SENSOR	H	L	I
	2	DGND	DGND	DGND	-
	3	+5V	+5V	+5V	-
CN506 TONER	1	+5V	+5V	+5V	-
	2	TONER	H	L	O
	3	AGND	AGND	AGND	-

CONNECTOR	PIN-NO	DESCRIPTION	IDLE	ACTIVE	IN/OUT
CN9 LSU	1	DGND	DGND	DNGD	-
	2	VDO	H	L	O
	3	LDON	H	L	O
	4	DPI_SEL	H	L	O
	5	+5Vs	+5V	+5V	-
	6	HSYNC	H	L	I
	7	NC	_	_	_
	8	LSU_CLK	CLK	CLK	O
	9	LREADY	H	L	I
	10	PMOTOR	+24V	+24V	_
	11	AGND	AGND	AGND	-
	12	+24VS2	+24V	+24V	-
	13	STACKER	H	L	I
	14	DGND	DGND	DGND	-
	15	+5V	+5V	+5V	-
	16	KEY_DEV	H	L	I
	17	DGND	DGND	DGND	-
	18	+5V	+5V	+5V	-
CN10 VIDEO CONTROLLER INTERFACE	1	EBUSY	H	L	O
	2,17,19,20,21 22,23,24	DGND	DGND	DNGD	-
	3	EMSG	H	L	O
	4	EXIT_PAP	H	L	O
	5	CCLK	H	PULSE	I
	6	PRINT	H	L	I
	7	VDI	H	L	I
	8	CPRDY	-	-	
	9	PSYNC	H	-	O
	10	READY	H	L	O
	11	HSYNC	H	L	O
	12	NC	NC	NC	-
	13,15,16,18 25,27,28	+5V	+5V	+5V	-
	14	CMSG	H		I

5-4-3. S.C.F Board Connector Pin Assignment

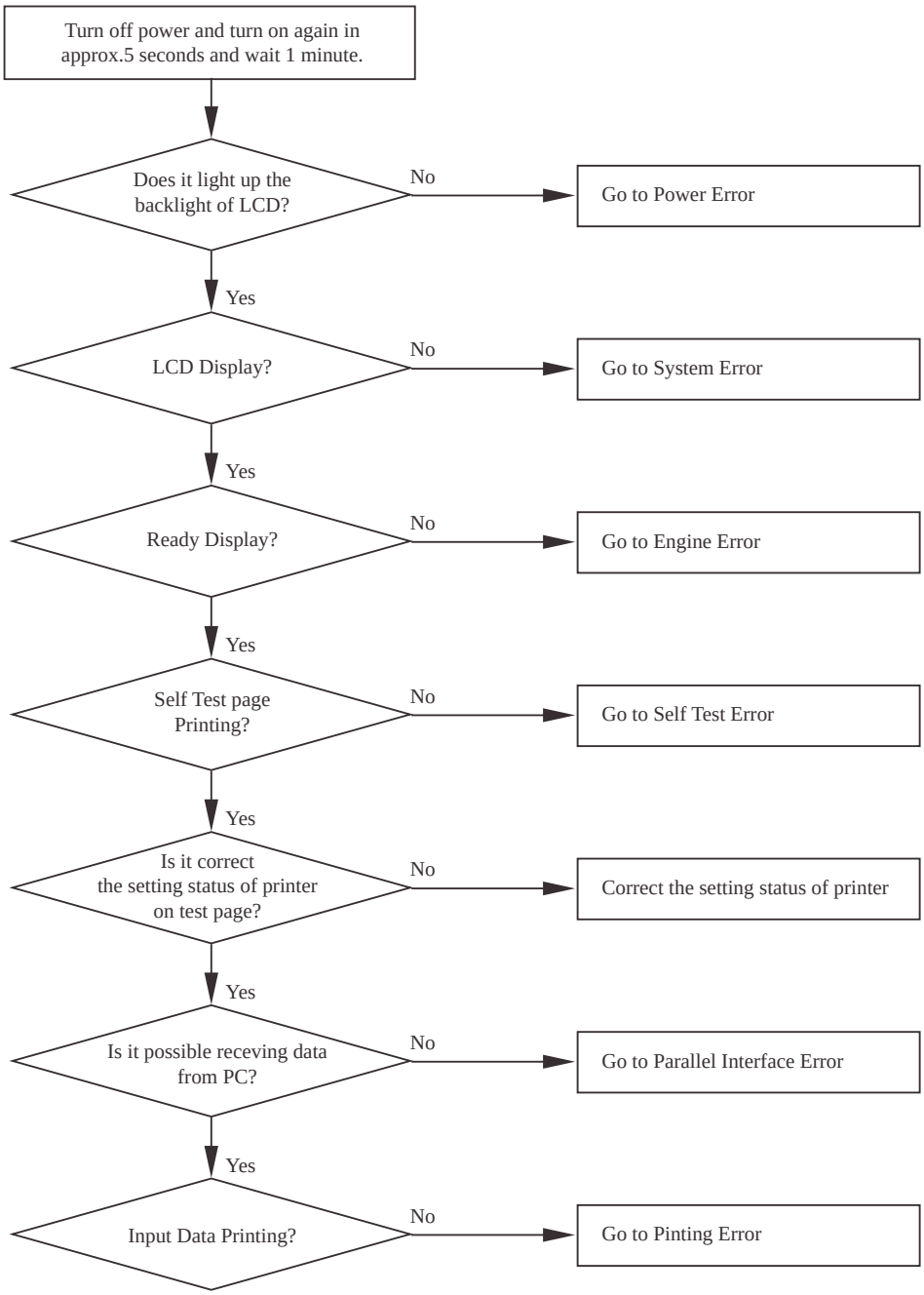
CONNECTOR	PIN-NO	DESCRIPTION	IDLE	ACTIVE	IN/OUT
CN1 ENGINE JONIT BOARD INTERFACE	1	+5V	+5V	+5V	-
	2	AGND	AGND	AGND	-
	3	+24V	+24V	+24V	-
	4	STS_SCF	PULSE	PULSE	O
	5	CMD_SCF	PULSE	PULSE	I
	6	OPT_CLK	PULSE	PULSE	I
	7	SCF_READY	H	L	O
	8	DGND	DGND	DGND	-
CN2 MOTOR	1	MOT_PA	+24V	PULSE	-
	2	MOT_PB	+24V	PULSE	O
	3	MOT_PA*	+24V	PULSE	O
	4	MOT_PB*	+24V	PULSE	O
CN3 DCU	1	+5V	+5V	+5V	-
	2	DCU_IN/OUT	PULSE	PULSE	I/O
	3	DCU_CLK	CLOCK	CLOCK	O
	4	DGND	DGND	DNGD	-
CN4 PICK UP	1	+24V	+24V	+24V	-
	2	CLUTCH	+24V	L	O
CN5 CASSETTE	1	CASET_1	H	L	I
	2	CASET_2	H	L	I
	3	CASET_3	H	L	I
	4	DGND	DGND	DNGD	-

5-5 .Troubleshooting of Video Controller

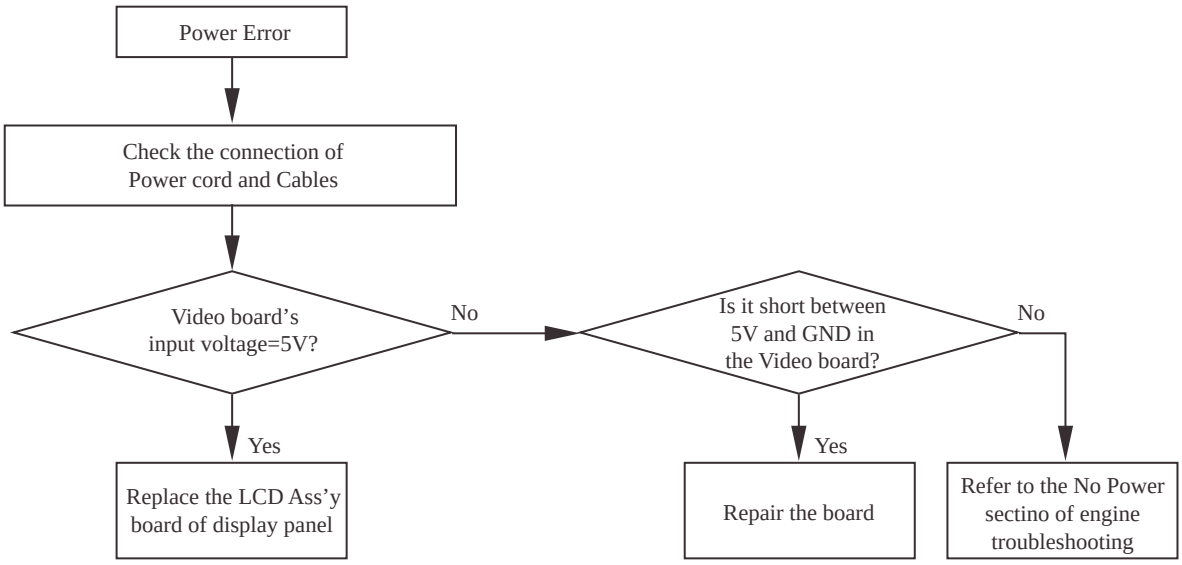
Most electronic products are sensitive to connectors and assemblies that are not complete seated. Therefore, before starting the troubleshooting procedure, do a mechanical check of all the connectors and assemblies to make sure that everything is properly seated.

1. For a complex malfunction, check first for a bad weld, short circuit or loose wire on the solder area of the board
2. Input low level is standard for the TTL logic level below 0.8V.
   Input high level is standard for the TTL logic level above 3.5V.
   But, for PowerPC 603e, the input low level is less than 0.8V, and the input high level is more than 2.0V.
3. USE an oscilloscope or logic analyzer for inspecting the crystal oscillator or its waveform.

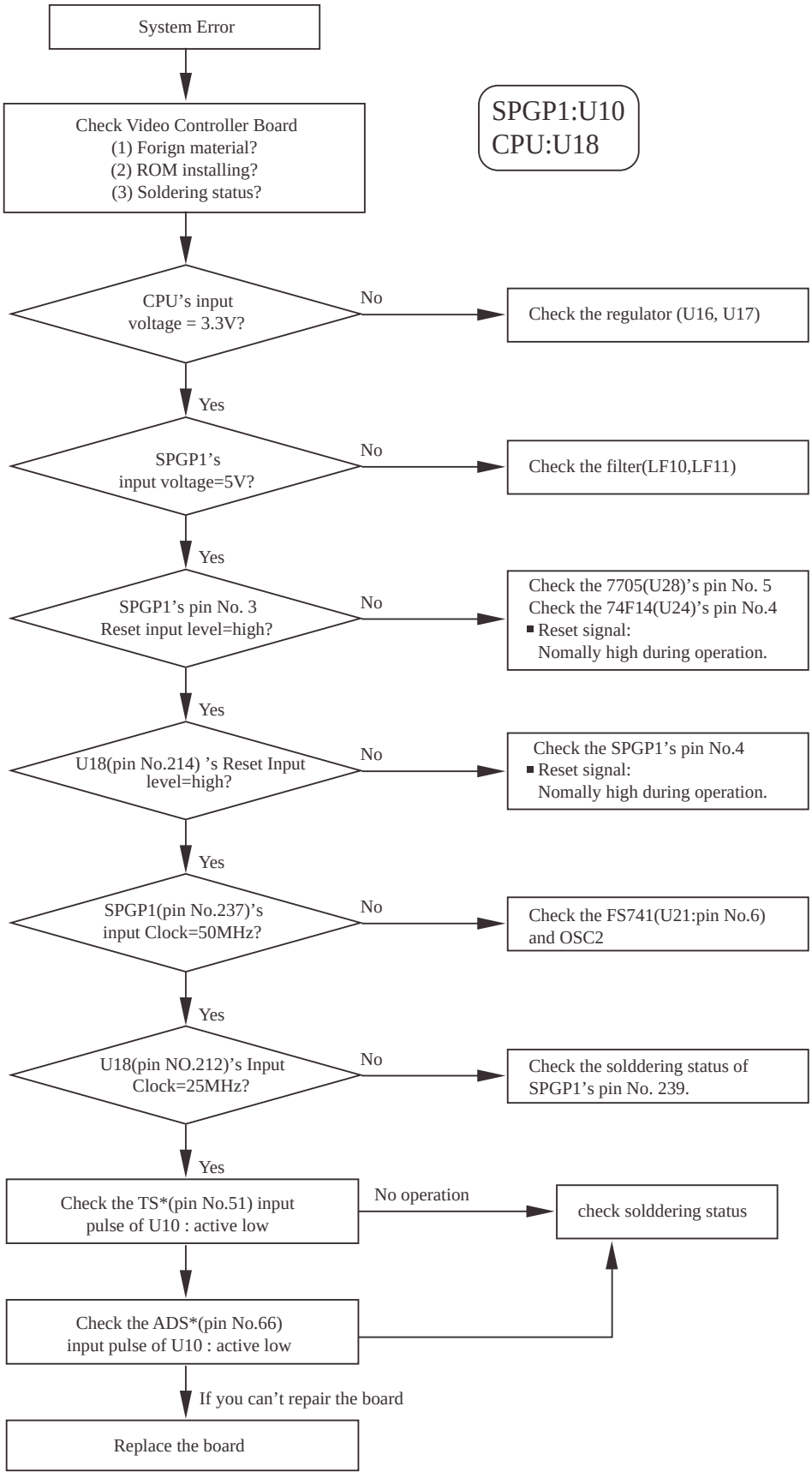
5-5-1. Troubleshooting Flow Chart



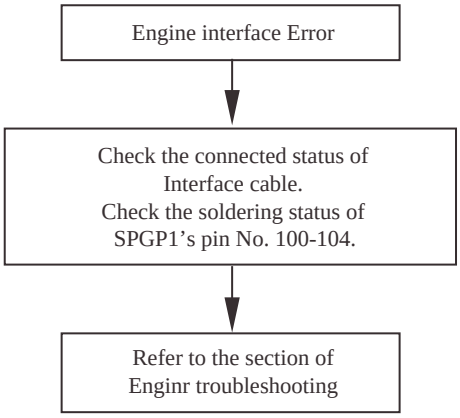
● Power Error


Power Error
Check the connection of Power cord and Cables
Video board's input voltage=5V?
No
Is it short between 5V and GND in the Video board?
No
Yes
Yes
Replace the LCD Ass'y board of display panel
Repair the board
Refer to the No Power sectino of engine troubleshooting

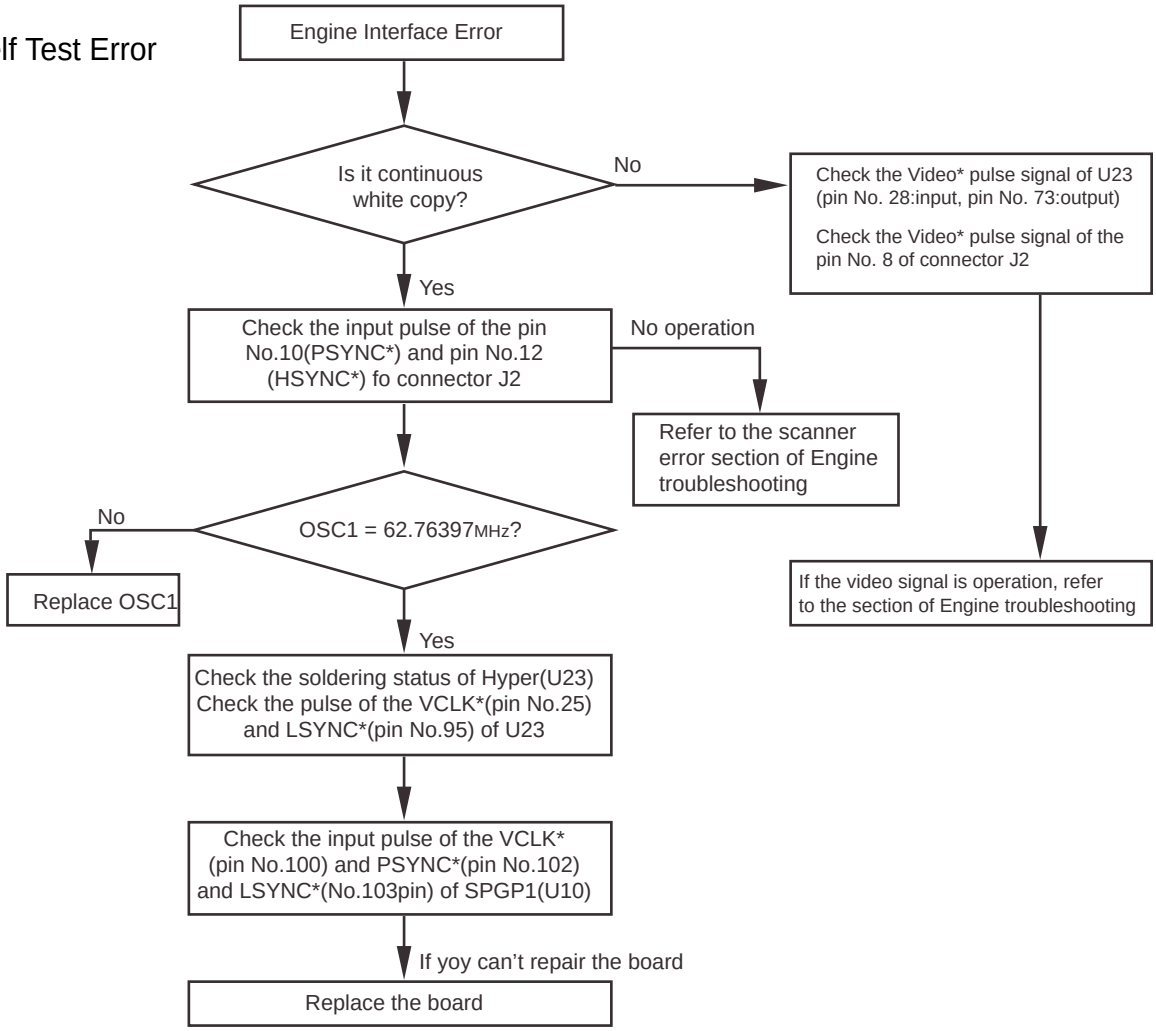
● System Error



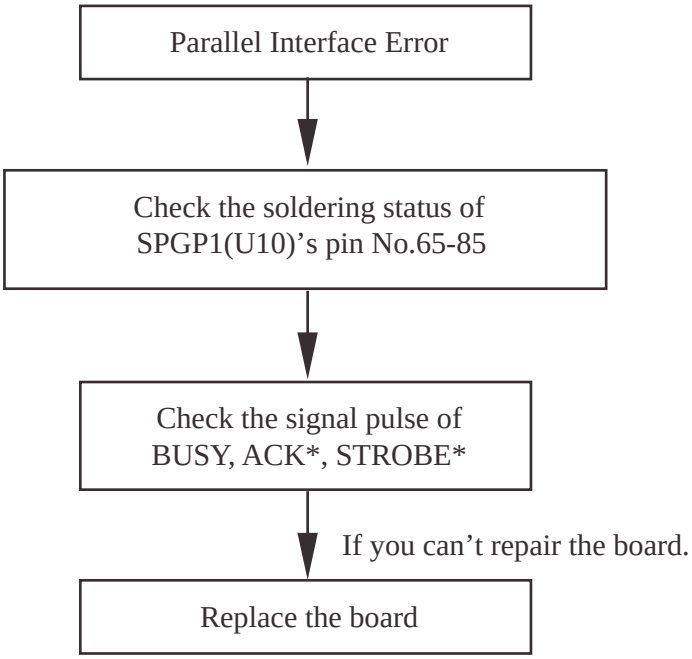
● Engine Error


Engine interface Error
Check the connected status of Interface cable.
Check the soldering status of SPGP1's pin No. 100-104.
Refer to the section of Enginr troubleshooting

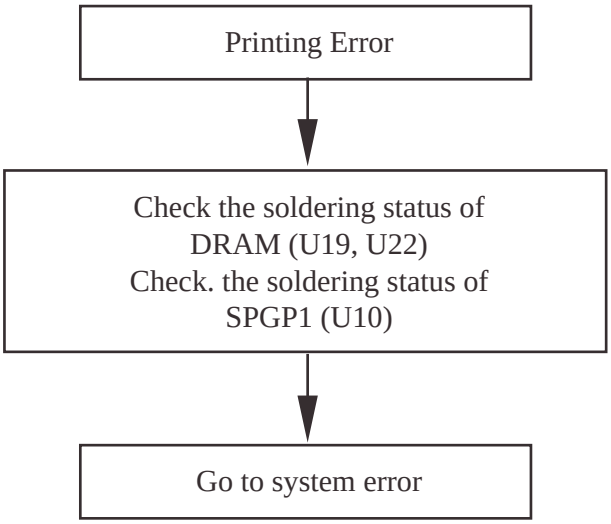
● Self Test Error


Engine Interface Error
Is it continuous white copy?
No
Check the Video* pulse signal of U23 (pin No. 28:input, pin No. 73:output)
Check the Video* pulse signal of the pin No. 8 of connector J2
Yes
Check the input pulse of the pin No.10(PSYNC*) and pin No.12 (HSYNC*) fo connector J2
No operation
Refer to the scanner error section of Engine troubleshooting
OSC1 = 62.76397MHz?
No
Replace OSC1
If the video signal is operation, refer to the section of Engine troubleshooting
Yes
Check the soldering status of Hyper(U23)
Check the pulse of the VCLK*(pin No.25) and LSYNC*(pin No.95) of U23
Check the input pulse of the VCLK* (pin No.100) and PSYNC*(pin No.102) and LSYNC*(No.103pin) of SPGP1(U10)
If yoy can't repair the board
Replace the board

● Parallel Interface Error


Parallel Interface Error
Check the soldering status of SPGP1(U10)'s pin No.65-85
Check the signal pulse of BUSY, ACK*, STROBE*
If you can't repair the board.
Replace the board

● Printing Error



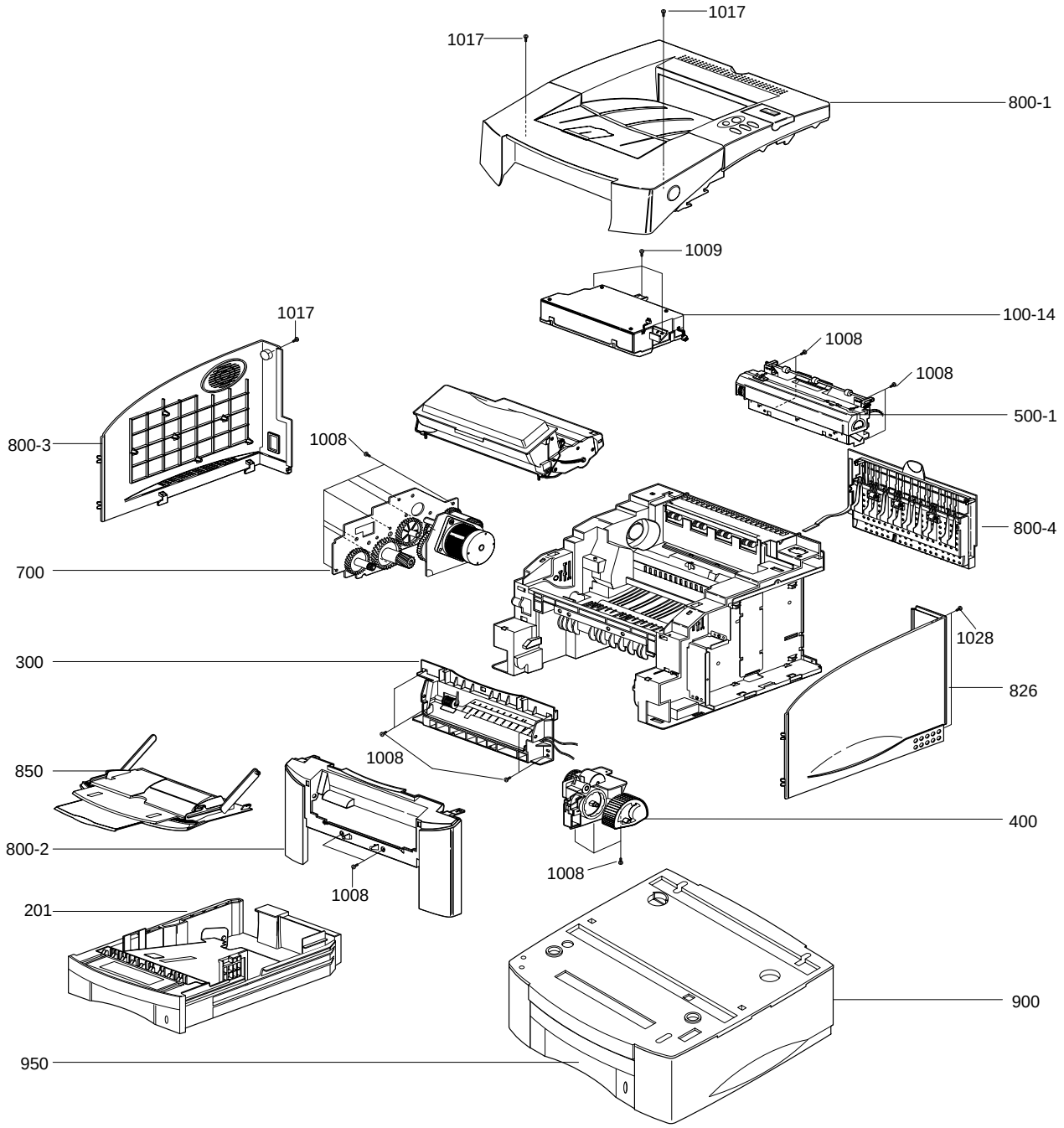
5-5-2. Troubleshooting Table of Video Controller Board

NO.	Error Type	Ckeck List	Repair
1	The backlight of LCD is not lit up	Power cord connection	Connect the power cord
		Vcc voltage(nominal is +5V) level Vcc voltage should be in the range between+4.38-+5.2V	Refer to the section of Engine troubleshooting
		Short Between Vcc and GND	Repair board
		Mutual connection of engine, key panel to LCD panel's connected cable(10pin), video board to key panel's connected cable(20pin) and engine interface cable(28pin) The pin of connector is straigh.	Connect the cable to connector
2	It doesn't displayed characters on LCD	Mutual connection of panel cabel(10pin) video board to key panel's connected cable(20pin)	Confirm the connection of connector
		Any component damage on a video controller board.	Repair or replace it with appropriate tools. If uanable to do this, replace video board.
		Any foreign conductive chips of solder or material is on the video controller board or is laid between IC pins after power off.	Remove any foreign conductive chips on the video controller board.
		Reset Error:Reset signal is normal high during operation	
		System source clock is a 50MHz Check point : U21(FS741)'s pin No.6,	Replace the FS741
		The output clock of SPGP1 is a 25MHz The input clock of CPU(U18) is a 25MHz	Replace the board
3	White copy	The video data colck source is a 62.7639MHz at OSc1 The input clock of U23 is a 62.76397MHz The output clock of U23 is a 16MHz The input clock of U18's pin No.125 is a 16MHz	Replace the board
		Check the normal operation of HSYNC and PSYNC*	Active low impulse
4	DRAM Error	*Check the DRAM address signals.(pin No. 17-20, 23-28 : U19, U11) *Check the DRAM data signals. (pin No. 2-5. 7-10. 33-36. 38-41 : U19, U22)	
5	EEPROM	*Check the EEPROM clock signal. (pin No. 2 : U1) *Check the EEPROM data signals. (pin No. 3,4 : U1)	
6	ROM Error	*Check the ROM chip select signals and read signal (pin No. 12,14) *CHeck the ROM data signals. (pin No. 15-22, 24-31 : U3, U14, U2, U13)	
7	Engine Error	*Refer to the section of Engine troubleshooting	
8	Parallel Interface Error	* CHeck the operation of printer driver. * Check the printer cable(bidirectional cable)	Refer to USER's manual Replace the printer cable
9	General desc-riptions of troubleshooting	*Please refer to the user's manual. *If you can't fix the trouble of video controller board, replace the video board by the verified board.	Replace the board

MEMO

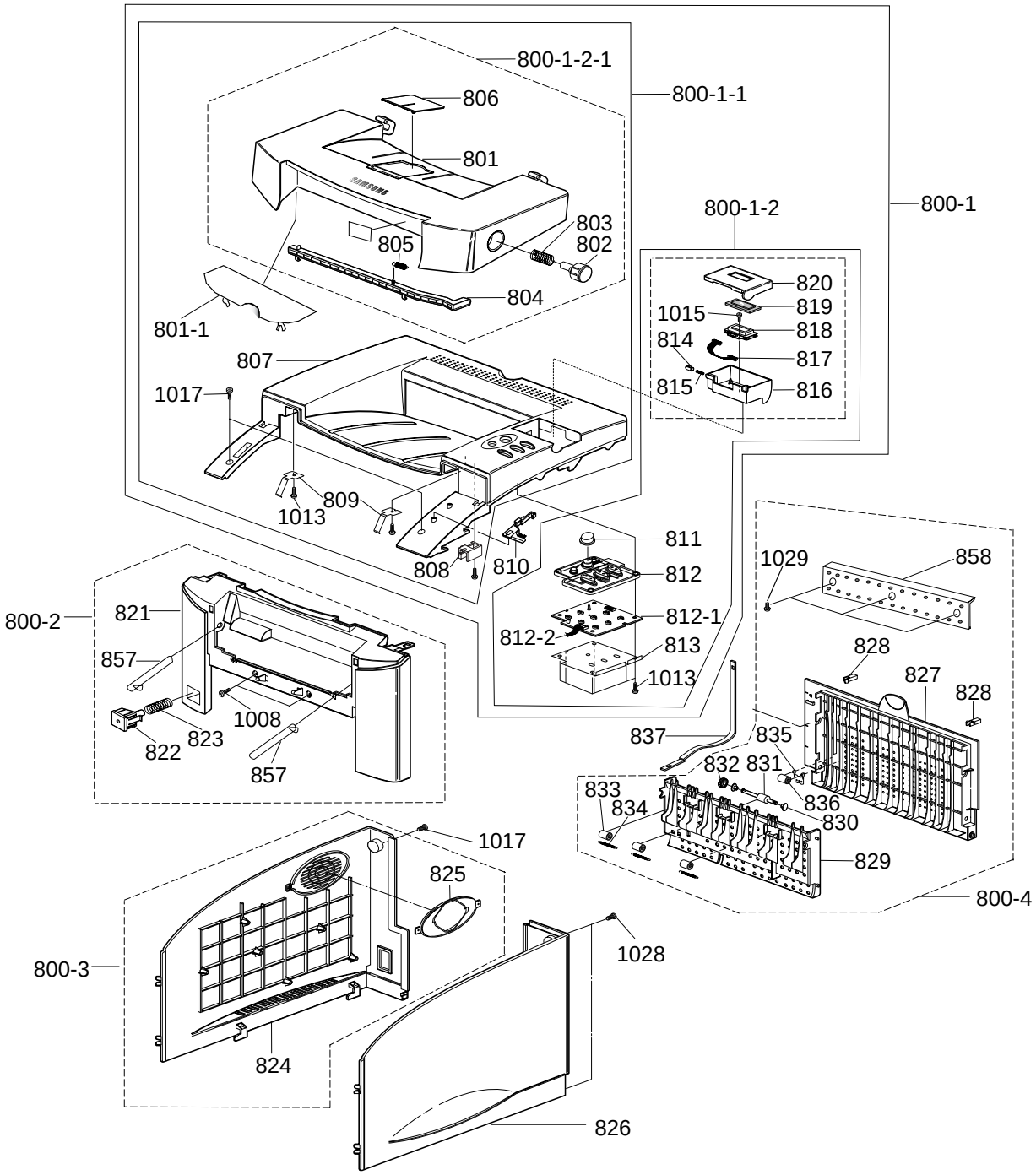
6. Exploded Views & Parts List

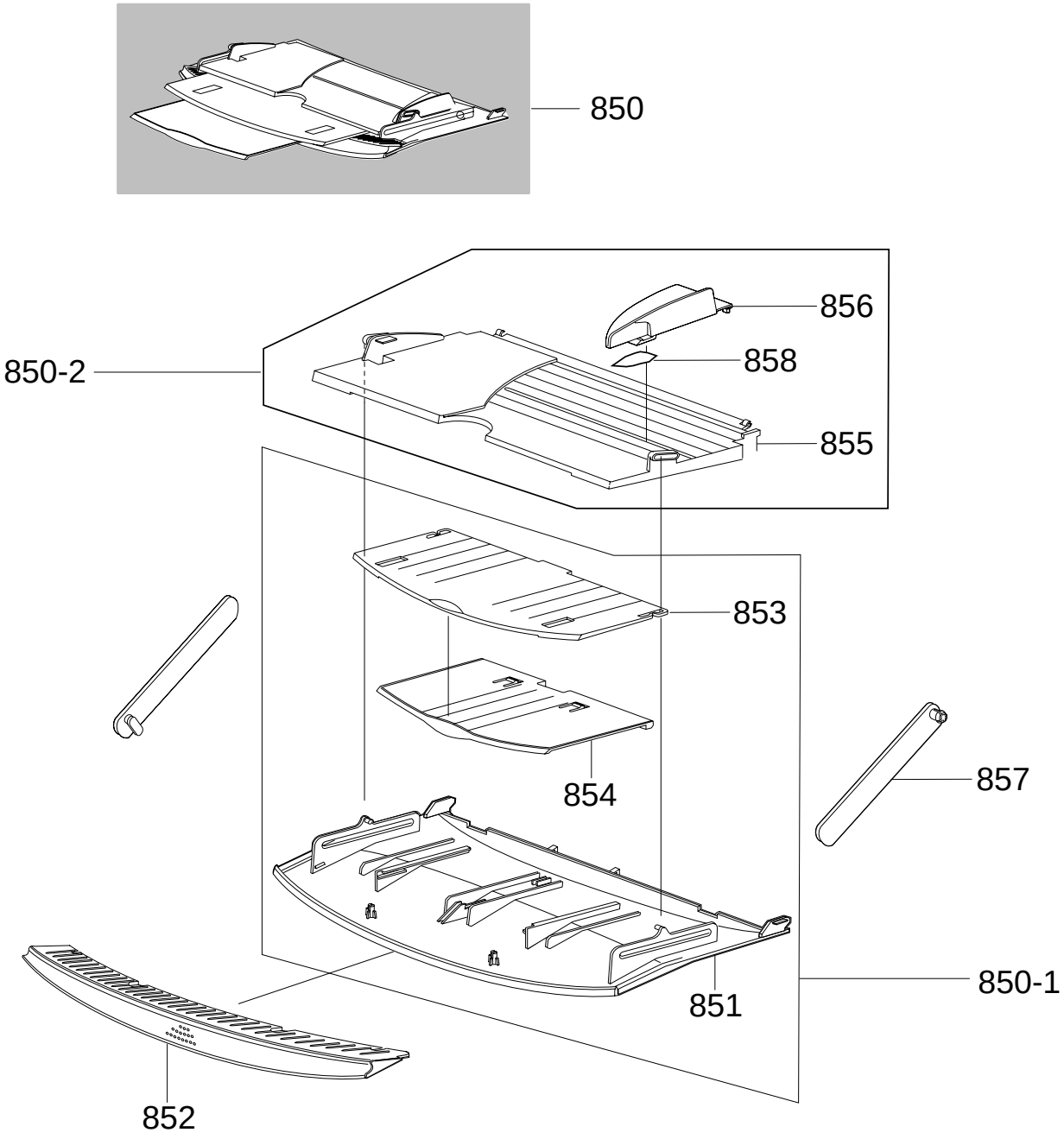
Main Ass'y



MEMO

6-1-1. Cover Ass'y

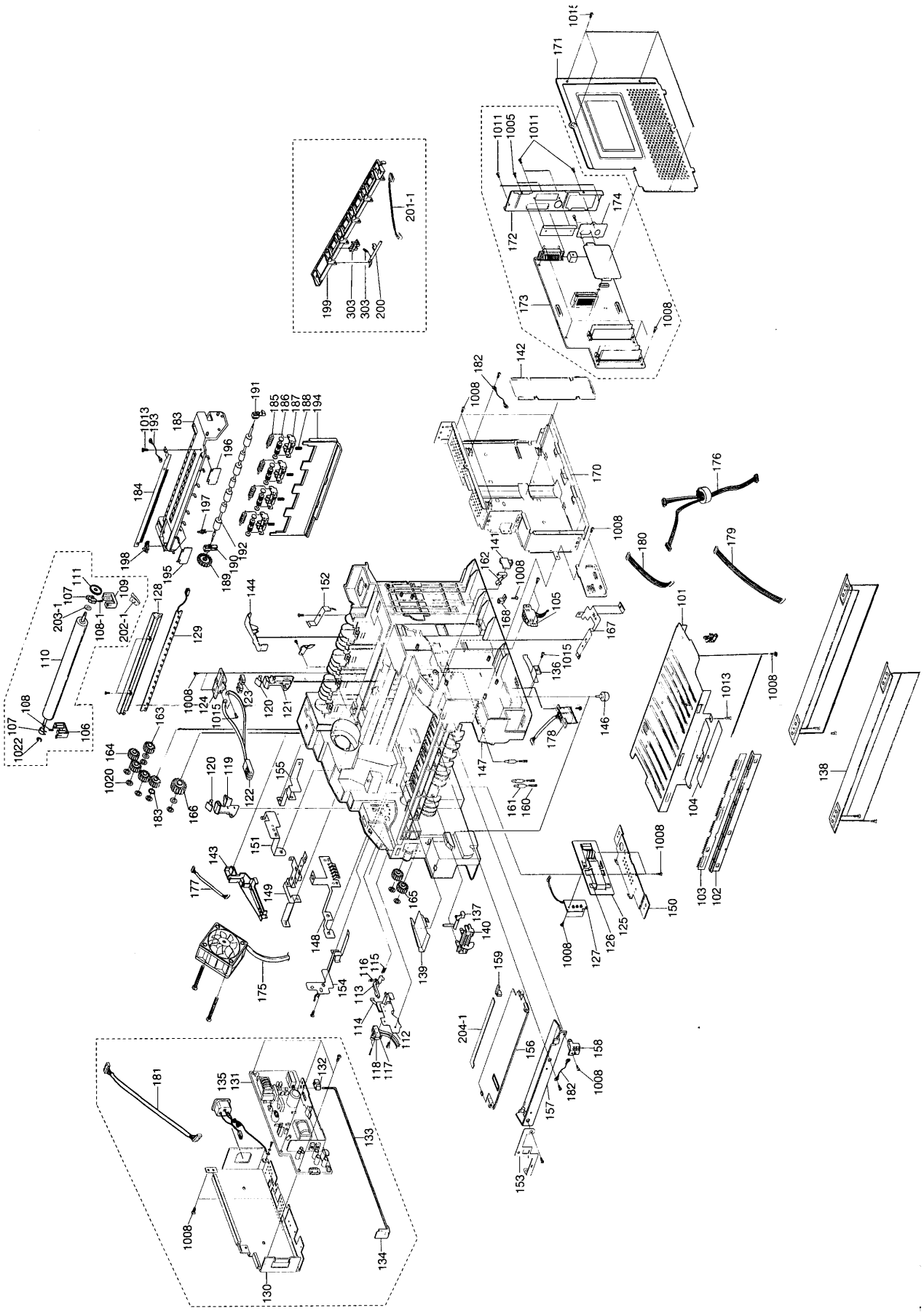



850
856
858
850-2
855
853
854
857
851
850-1
852

6-1-2. Cover Ass'y Parts List

Location NO.	Description	SEC.Code	Q'ty	A/S	Remark
194	PMO-COVER EXIT	JC72-40943F	1	O	
826	PMO-COVER RIGHT	JC72-40941E	1	O	
857	PMO-LINK TRAY	JC72-40957D	2	O	
800-1	ELA HOU-COVER MAIN	*	1	X	
1013	SCREW-TAPTITE	*	6	X	
800-1-1	ELA HOU-COVER TOP	JC68-01535C	1	O	SEF
		JC68-01535B	1	O	SEG,SEUK,STA
807	PMO-COVER TOP	*	1	X	
808	PMO-STOPPER HINGE	*	1	X	
809	IPR-SPRING HINGE	*	2	X	
1012	SCREW-TAPTITE	*	2	X	
1013	SCREW-TAPTITE	*	1	X	
800-1-1-1	MEA RACK-COVER OPEN	*	1	X	
801	PMO-COVER OPEN	*	1	X	
802	PMO-BUTTON OPEN	*	1	X	
803	SPRING-CS	*	1	X	
804	PMO-HOOK OPEN	*	1	X	
805	SPRING-HOOK LEVER2	*	1	X	
806	PMO-STACKER	*	1	X	
800-1-2	ELA HOU-PNL&LCD	*	1	X	
810	PMO-HOLDER CLEANER LSU	*	1	X	
811	PMO-KEY ONLINE	*	1	X	
812	PMO-KEY SEESAW	*	1	X	
813	IPR-INSULATOR PANEL	*	1	X	
814	PMO-LCD LOCKER	*	1	X	
815	SPRING-LCD LOCKER	*	1	X	
816	PMO-HOUSING PANEL L	*	1	X	
817	CBF HARNESS-LCD	*	1	X	
818	PBA SUB DISP-LCD	*	1	X	
819	PMO-WINDOW PANEL	*	1	X	
820	PMO-HOUSING PANEL U	*	1	X	
1015	SCREW-TAPTITE	*	1	X	
812-1	PBA SUB DISP-PANEL	*	1	X	
812-2	CBF HARNESS-PANEL	*	1	X	
800-2	MEA RACK-COVER FRONT	JC97-01024B	1	O	
821	PMO-COVER FRONT	*	1	X	
822	PMO-BOTTOM POWER	*	1	X	
823	SPRING-CS	*	1	X	
800-3	MEA RACK-COVER LEFT	JC97-01025B	1	O	
824	PMO-COVER LEFT	*	1	X	
825	PMO-AIRDUCT	*	1	X	
800-4	MEA RACK-COVER REAR	JC97-01026B	1	O	
827	PMO-COVER REAR	*	1	X	
828	SPRING-REAR	*	2	X	
829	PMO-GUIDE INNER DP	*	1	X	
830	PMO-BEARING LARGE DP	*	2	X	
831	RCT-ROLLER REAR DP	*	1	X	
832	GEAR-DUPLEX	*	1	X	
833	PMO-IDLE PICK UP	*	3	X	
834	SPRING-FEED ROLL	*	3	X	
835	IPR-SPRING UPPER DP	*	1	X	
836	PMO-ROLLER UPPER DP	*	1	X	
858	ICT-BRKT REAR COVER	*	1	X	
1029	SCREW-TAPTITE	*	3	X	
850-1	MEA RACK-COVER TRAY	JC97-01037B	1	O	
851	PMO-COVER TRAY	*	1	X	
852	PMO-COVER COLOR	*	1	X	
853	PMO-SUB TRAY FIRST	*	1	X	
854	PMO-SUB TRAY SECOND	*	1	X	
850-2	MEA RACK-TRAY MP	JC97-01038B	1	O	
851	PMO-TRAY MP	*	1	X	
853	PMO-SIDE GUIDE TRAY	*	1	X	
858	ICT-SHEET SIDE GUIDE	*	1	X	

6-2-1. Frame Ass'y



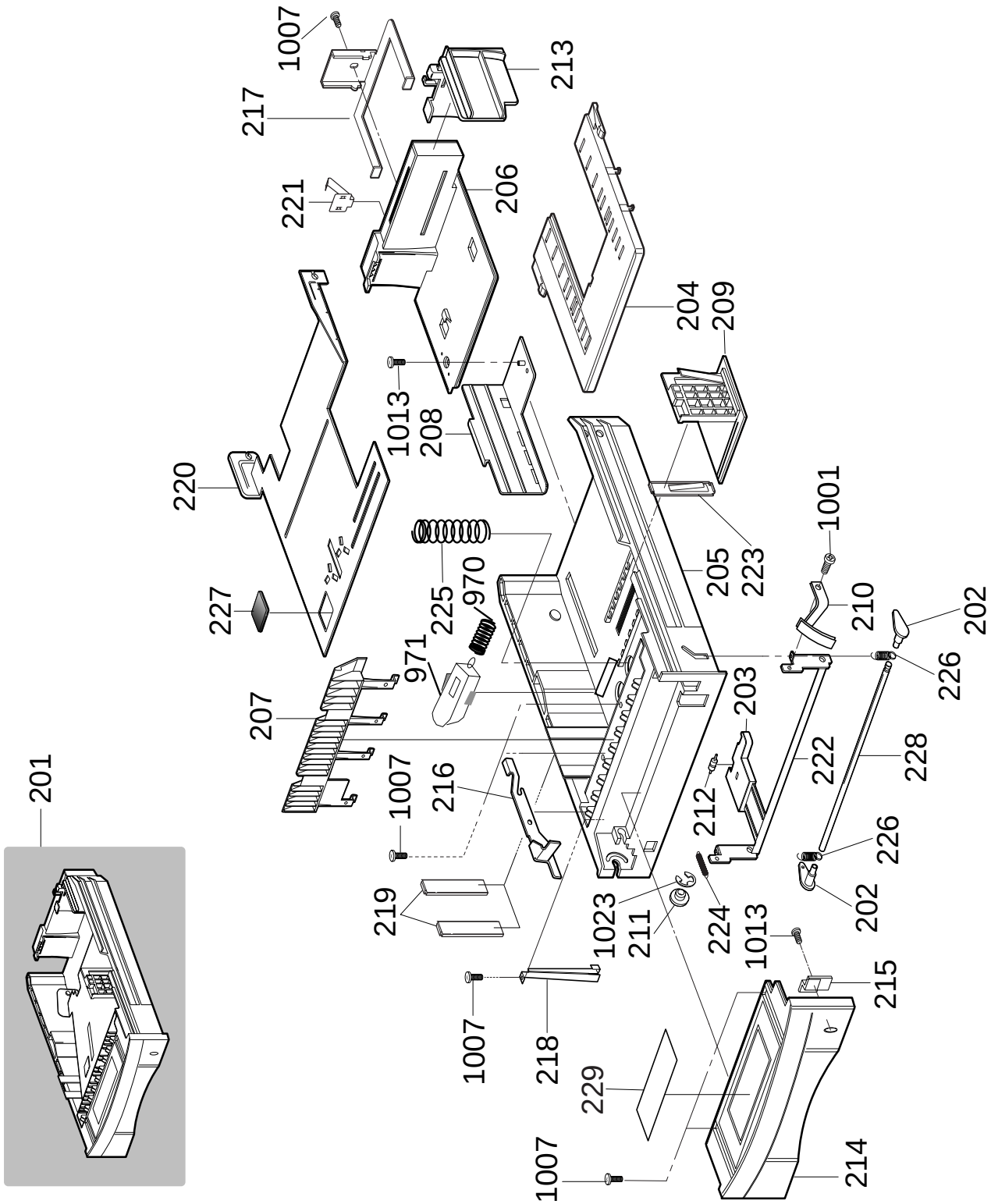
6-2-2. Frame Ass'y Parts List

Location NO.	Description	SEC.Code	Q'ty	A/S	Remark
170-1	ELA HOU-CONTROLLER	*		X	
170-1-1	PBA MAIN CTRL-CONTROLLER	JC92-01182A	1	O	
172	IPR-BRKT ICU	JC70-10931A	1	O	
173	IPR-BKT NETWORK	JC70-10932A	1	O	
174	IPR-BKT SERIAL	JC70-10933A	1	O	
1015	SCREW-TAPTITE	*	3	X	
100-1	MEA RACK-GUIDE T/R	JC97-01033A	1	O	
101	PMO-GUIDE TRANSFER	*	1	X	
102	PMO-HOLDER SAW	*	1	X	
103	IPR-PLATE SAW	*	1	X	
104	PPR-INSULATOR G/TR	*	1	X	
1026	CABLE CLAMP	*	1	X	
100-2	ROLLER TR ASSY	JC97-01094A	1	O	
100-2-1	MEA RACK-HOLDER TR L	JC97-01020A	1	O	
106	PMO-HOLDER TR L	*	1	X	
107	PMO-BUSH	*	1	X	
108	SPRING-TR_L	*	1	X	
100-2-2	MEA RACK-HOLDER TR R	JC97-01021A	1	O	
107	PMO-BUSH	*	1	X	
109	PMO-HOLDER TR R	*	1	X	
108-1	SPRING-TR_R	*	1	X	
202-1	SPRING-PLATE TR	*	1	X	
100-2-3	MEA RACK-ROLLER TR	*	1	X	
110	MEC-ROLLER TRANSFER	JC75-10954A	1	O	
111	GEAR-TRANSFER	JC66-40947A	1	O	
1022	RING-E	*	1	X	
100-3	ELA HOU-BRKT C/O	*	1	X	
112	MEA RACK-BRKT C/O	*	1	X	
113	PMO-ACTUATOR C/O	*	1	X	
115	SPRING-C/O COM	*	1	X	
116	SPRING-C/O	*	1	X	
117	ELA CBF PWR-5VSWITCH	JC96-01144A	1	O	
118	ELA CBF PWR-24VSWITCH	JC96-01145A	1	O	
1006	SCREW-MACHINE	*	2	X	
1025	CABLE TIE	*	1	X	
100-4	MEA RACK-GUIDE DEV L	JC97-01018A	1	O	
119	PMO-GUIDE DEV L	*	1	X	
120	"SPRING-PS,G/DEV"	*	1	X	
100-5	MEA RACK-GUIDE DEV R	JC97-01019A	1	O	
120	"SPRING-PS,G/DEV"	*	1	X	
121	PMO-GUIDE DEV R	*	1	X	
100-6	ELA HOU-FUSER TER	JC96-01142A	1	O	
122	CBF HARNESS-FUSING	JC39-40522A	1	O	
123	IPR-TERMINAL FU	*	2	X	
124	PMO-HOUSING TERMINAL	*	1	X	
1015	SCREW-TAPTITE	*	2	X	
1025	CABLE TIE	*	1	X	
100-7	ELA HOU-CST SENSER	JC96-01143A	1	O	
125	IPR-BRKT PAPER SIZE	*	1	X	
126	IPR-PUSH PLT SPRING	*	1	X	
127	PBA SUB-CASSETTE	*	1	X	
1001	SCREW-MACHINE	*	2	X	
100-8	ELA HOU-PTL	JC96-01141A	1	O	
128	PMO-COVER QUENCHING	*	1	X	
129	PBA SUB-PTL	*	1	X	
100-9	ELA HOU-SMPS 220V	*	1	X	
130	IPR-SHIELD SMPS	*	1	X	
131	SMPS-220V	JC44-10503A	1	O	
100-9	ELA HOU-SMPS 110V	*	1	X	
130	IPR-SHIELD SMPS	*	1	X	
131	SMPS-110V	JC44-10502A	1	O	
132	PMO-CAP WIRE SUPPORT	*	1	X	

Location NO.	Description	SEC.Code	Q'ty	A/S	Remark
133	SPRING-LINK WIRE	*	1	X	
134	PMO-CAP POWER	*	1	X	
100-11	MEA RACK-EXIT ROLLER	JC97-01034A	4	O	
185	PMO-ROLLER FD R	*	1	X	
186	PMO-ROLLER FD F	*	1	X	
187	PMO-HOLDER EXIT ROLL	*	1	X	
188	SPRING-EXIT ROLL FD	*	1	X	
100-12	MEA RACK-TERMINAL HV	JC97-01035A	3	O	
160	SPRING-CS	*	1	X	
161	ICT-TERMINAL HV	*	1	X	
100-14	UNIT-LSU	JC59-00001A	1	O	
105	ELA HOU-SOCKET CON	JC96-01071A	1	O	
136	IPR-PLATE CST GUIDE	*	1	X	
137	PMO-ACTUATOR FEED	JC72-40984A	1	O	
138	IPR-BAR CROSS BOTTOM	JC70-10958A	2	O	
139	IPR-BRKT DUST	*	1	X	
140	PMO-CAP ACT FEED	*	1	X	
141	PMO-CAP TERMINAL TR	*	1	X	
142	PMO-CAP WIRE	*	1	X	
143	PMO-CAP WIRE CST	*	1	X	
144	PMO-CAP WIRE LSU	*	1	X	
1008	SCREW-TAPTITE	*	8	X	
1008	SCREW-TAPTITE	*	3	X	
1008	SCREW-TAPTITE	*	4	X	
1008	SCREW-TAPTITE	*	7	X	
1008	SCREW-TAPTITE	*	1	X	
1008	SCREW-TAPTITE	*	2	X	
1008	SCREW-TAPTITE	*	4	X	
1008	SCREW-TAPTITE	*	2	X	
1008	SCREW-TAPTITE	*	2	X	
1008	SCREW-TAPTITE	*	4	X	
1008	SCREW-TAPTITE	*	1	X	
1008	SCREW-TAPTITE	*	4	X	
1008	SCREW-TAPTITE	*	1	X	
145	IPR-COVER PCB	JC70-10953A	1	O	
146	FOOT-RUBBER	*	2	X	
147	PMO-FRAME BASE	*	1	X	
148	IPR-GROUND BRKT GEAR	*	1	X	
149	IPR-GROUND FUSER	*	1	X	
150	IPR-GND BAR BOTTOM	*	1	X	
151	IPR-GROUND DU BRKT	*	1	X	
152	IPR-GROUND EXIT ROLL	*	1	X	
153	IPR-GROUND MP CON	*	1	X	
154	IPR-GROUND OPC	*	1	X	
155	IPR-GND SHIELD SMPS	*	1	X	
156	IPR-GUIDE P/FRONT	JC70-10964A	1	O	
157	MEA RACK-GUIDE P/UPP	JC97-01228A	1	O	
158	PMO-HINGE GUIDE R	*	1	X	
159	PMO-HOLDER G/PAPER	*	1	X	
162	IPR-TERMINAL T/R	*	1	X	
164	"GEAR-EXIT/U,ID"	JC66-40211B	4	O	
164-1	"GEAR-EXIT,IDLE(Z17)"	*	1	X	
165	GEAR-P/UP DRIVE	*	2	X	
166	"GEAR-DP,IDLE"	*	1	X	
167	IPR-GROUND FUSER R	*	1	X	

Location NO.	Description	SEC.Code	Q'ty	A/S	Remark
168	PMO-REAR CST ALIGN	*	2	X	
169	IPR-PLATE GRIP CST	*	1	X	
147-1	ICT-SPACER FRAME	JC70-40921A	1	X	
1015	SCREW-TAPTITE	6003-000266	2	X	
1015	SCREW-TAPTITE	6003-000266	4	X	
1015	SCREW-TAPTITE	6003-000266	1	X	
1015	SCREW-TAPTITE	6003-000266	5	X	
1015	SCREW-TAPTITE	*	2	X	
170	IPR-FRAME ICU	*	1	X	
171	IPR-SHIELD ICU	JC70-10930A	1	O	
175	FAN-DC	3103-001047	1	O	
175-1	SCREW-TAPTITE	*	2	X	
176	CBF HARNESS-LSU	JC39-40523A	1	O	
177	CBF HARNESS-CASSETTE	JC39-40524A	1	O	
178	CBF HARNESS-SCF1	JC39-40527A	1	O	
179	CBF HARNESS-JOINT	JC39-40605A	1	O	
180	CBF HARNESS-VIDEO	JC39-40530A	1	O	
181	CBF HARNESS-SMPS	JC39-40532A	1	O	
182	CBF HARNESS-MP GND	JC39-40538A	2	O	
183	PMO-GUIDE EXIT FD	*	1	X	
183-1	SPRING-CLUTCH	*	2	X	
184	MEC-BRUSH	JC75-10923A	1	O	
189	GEAR-EXIT	JC66-40209A	1	O	
190	"MEC-BEARING,EXIT"	*	1	X	
191	BEARING-E/UP R	*	1	X	
192	RCT-ROLLER EXIT FD	JC73-30906A	1	O	
193	CBF HARNESS-DPLX GND	JC39-40537A	1	O	
195	"PMO-LEVER STACKING1"	JC72-41188D	1	O	
196	"PMO-LEVER STACKING2"	JC72-41228D	1	O	
197	PMO-LEVER SEESAW	JC72-41189A	1	O	
198	PHOTO-INTERRUPTER	*	1	X	
604	PMO-ACTUATOR REAR DP	JC72-40974C	1	O	
624	ICT-BRKT SUPPORTER2	*	1	X	
810	PMO-CLEANER LSU	JC72-41022A	1	O	
837	PMO-STRIPE	JC72-41004C	1	O	
1028	SCREW-TAPTITE	*	2	X	
1008	SCREW-TAPTITE	*	1	X	
1009	SCREW-TAPTITE	*	3	X	
1010	SCREW-MACHINE	*	1	X	
1011	SCREW-TAPTITE	*	3	X	
1013	SCREW-TAPTITE	*	1	X	
1013	SCREW-TAPTITE	*	1	X	
1013	SCREW-TAPTITE	*	1	X	
1013	SCREW-TAPTITE	*	2	X	
1013	SCREW-TAPTITE	*	1	X	
1013	SCREW-TAPTITE	*	2	X	
1013	SCREW-TAPTITE	*	2	X	
1013	SCREW-TAPTITE	*	4	X	
1013	SCREW-TAPTITE	*	1	X	
1013	SCREW-TAPTITE	*	2	X	
1013	SCREW-TAPTITE	*	2	X	
1013	SCREW-TAPTITE	*	1	X	
1013	SCREW-TAPTITE	*	1	X	
1013	SCREW-TAPTITE	*	1	X	
1015	SCREW-TAPTITE	*	3	X	
1017	SCREW-TAPTITE	*	2	X	
1017-1	SCREW-TAPTITE	*	1	X	
1020	RING-CS	*	8	X	
1026	CABLE CLAMP	*	1	X	
1028	SCREW-MACHINE	*	2	X	
1030	SCREW-TAPTITE	*	1	X	

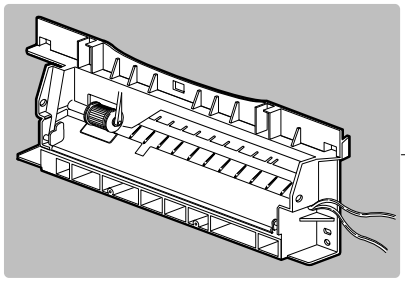
6-3-1. Cassette Ass'y

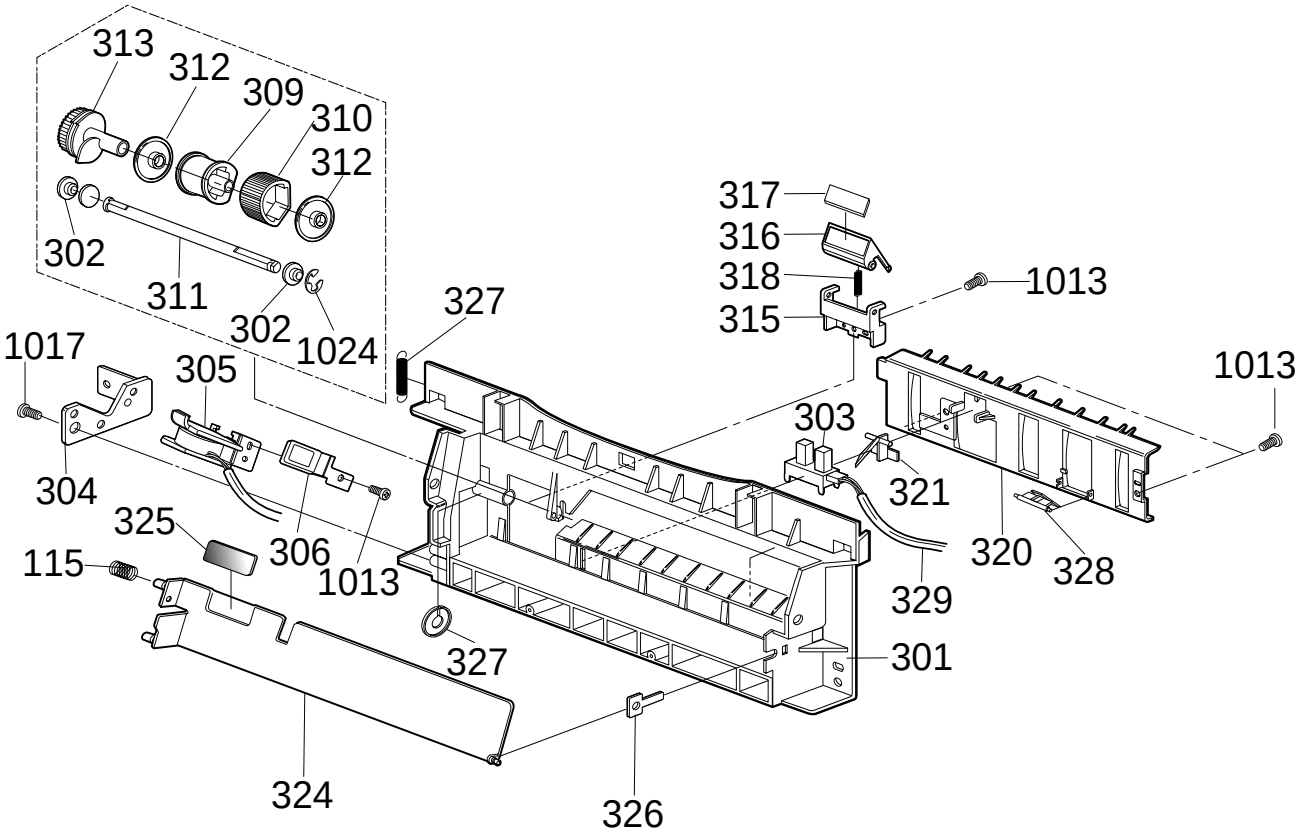


6-3-2. Cassette Ass'y Parts List

Location NO.	Description	SEC.Code	Q'ty	A/S	Remark
201	MEA-RACK FEEDER CST	JC97-01023C	1	O	
202	PMO-BUSH K/UP	*	2	X	
203	PMO-CAP PLATE K/UP	*	1	X	
204	PMO-COVER GUIDE EXT	*	1	X	
205	PMO-FRAME CASSETTE	*	1	X	
206	PMO-GUIDE EXT CST	*	1	X	
207	PMO-GUIDE PAPER	*	1	X	
208	PMO-GUIDE PAPER SIZE	*	1	X	
209	PMO-GUIDE SIDE CST	*	1	X	
210	PMO-LEVER PAPER	*	1	X	
211	PMO-LINK LEVER	*	1	X	
212	PMO-ROLLER FD R	*	1	X	
213	PMO-SIDE GUIDE EXT	*	1	X	
214	PMO-SUB GUIDE CAST	*	1	X	
215	PMO-WINDOW PAPER	*	1	X	
216	IPR-FINGER	*	1	X	
217	IPR-GUIDE EXT LOCK	*	1	X	
218	IPR-GUIDE PAPER SCF	*	1	X	
219	IPR-GUIDE PLT PAPER	*	2	X	
220	IPR-PLATE KNOCK UP	*	1	X	
221	IPR-PLATE SPR LOCK	*	1	X	
222	IPR-PLATE SUB K/UP	*	1	X	
223	IPR-SPR PLATE G/SIDE	*	1	X	
224	SPRING-LEVER	*	1	X	
225	SPRING-PLATE K/UP	*	1	X	
226	SPRING-SUB PLATE	*	2	X	
227	RPR-PAD CST	*	1	X	
228	ICT-SHAFT SPR K/UP	*	1	X	
230	LABEL(R)-CST REAR	*	1	X	
229	LABEL(R)-INSTRUCTION	*	1	X	
970	"SPRING-LOCKER,PLATE"	*	1	X	
971	PMO-LOCKER PLATE	*	1	X	
1001	SCREW-MACHINE	*	1	X	
1007	SCREW-TAPTITE	*	1	X	
1007	SCREW-TAPTITE	*	2	X	
1007	SCREW-TAPTITE	*	1	X	
1007	SCREW-TAPTITE	*	2	X	
1013	SCREW-TAPTITE	*	1	X	
1023	RING-E	*	1	X	

6-4-1. MP Tray Ass'y

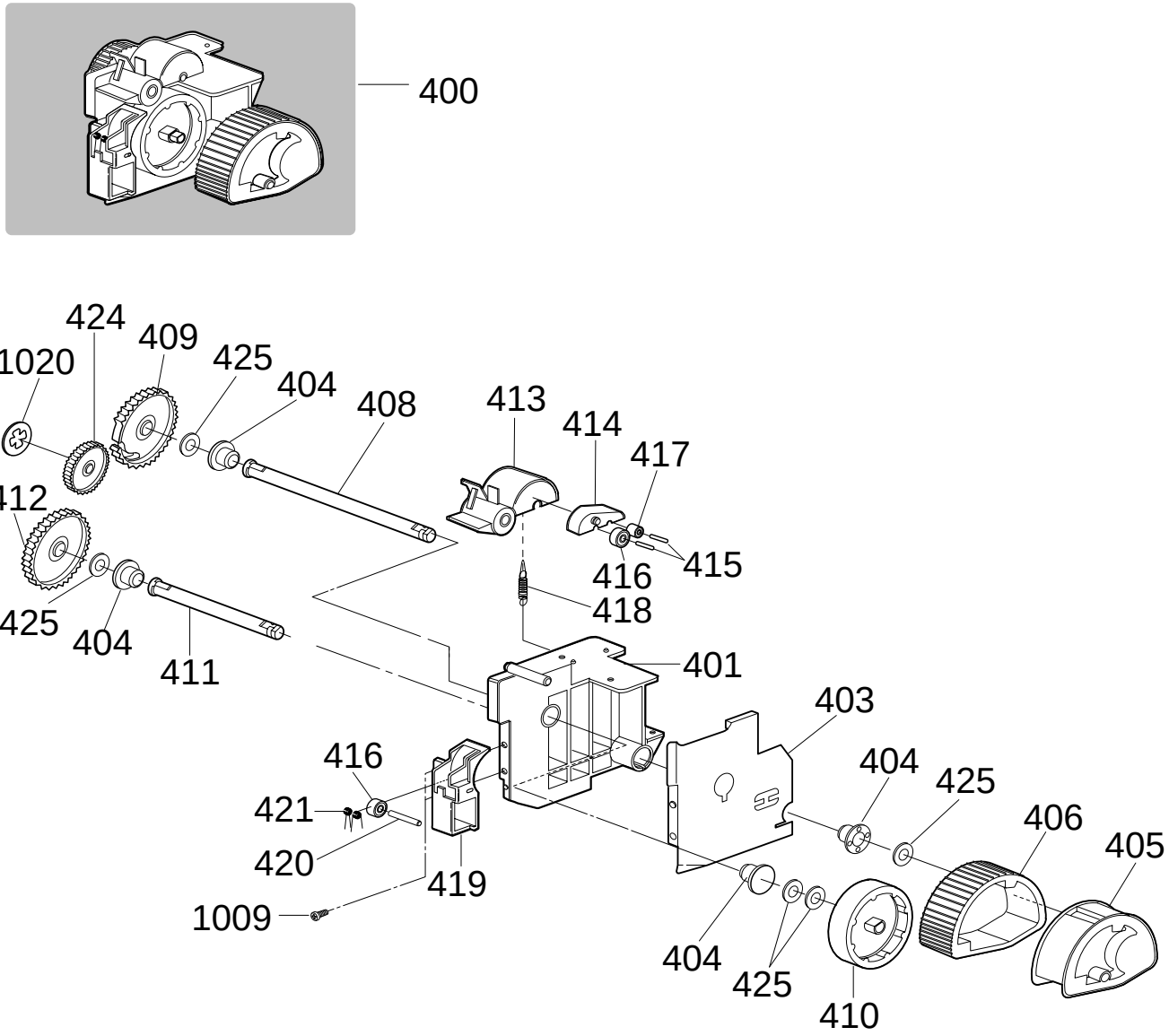




6-4-2. MP Tray Ass'y Parts List

Location NO.	Description	SEC.Code	Q'ty	A/S	Remark
300	ELA HOU-MP TRAY	JC96-01055A	1	O	
115	SPRING-C/O COM	*	1	X	
301	PMO-FRAME MP	*	1	X	
302	BEARING-PICK UP	*	2	X	
303	PHOTO-INTERRUPTER	*	1	X	
304	IPR-BKT SOLENOID MP	*	1	X	
305	SOLENOID-MP	*	1	X	
306	PMO-LIMIT SOLENOID	*	1	X	
309	PMO-HOUSING P/UP MP	*	1	X	
310	RPR-RUBBER P/UP MP	*	1	X	
311	ICT-SHAFT PICK UP MP	*	1	X	
312	PMO-IDLE PICK UP MP	*	2	X	
313	GEAR-CAM	*	1	X	
315	PMO-BKT HOLDER MP	*	1	X	
316	PMO-HOLDER PAD MP	*	1	X	
317	RPR-FRICTION PAD MP	*	1	X	
318	SPRING-F/P MP	*	1	X	
320	PMO-SUB GUIDE MP	*	1	X	
321	PMO-ACTUATOR EMPTY	*	1	X	
322	PMO-ACTUATOR PAPER	*	1	X	
324	IPR-K/UP PLATE MP	*	1	X	
325	RPR-PAD KNOCK UP MP	*	1	X	
326	PMO-BUSHING K/UP MP	*	1	X	
327	SPRING-KNOCK UP MP	*	1	X	
328	PMO-GUIDE RING	*	1	X	
329	CBF HARNESS-MP	*	1	X	
1013	SCREW-TAPTITE	*	1	X	
1013	SCREW-TAPTITE	*	1	X	
1013	SCREW-TAPTITE	*	2	X	
1015	SCREW-TAPTITE	*	1	X	
1024	RING-E	*	1	X	

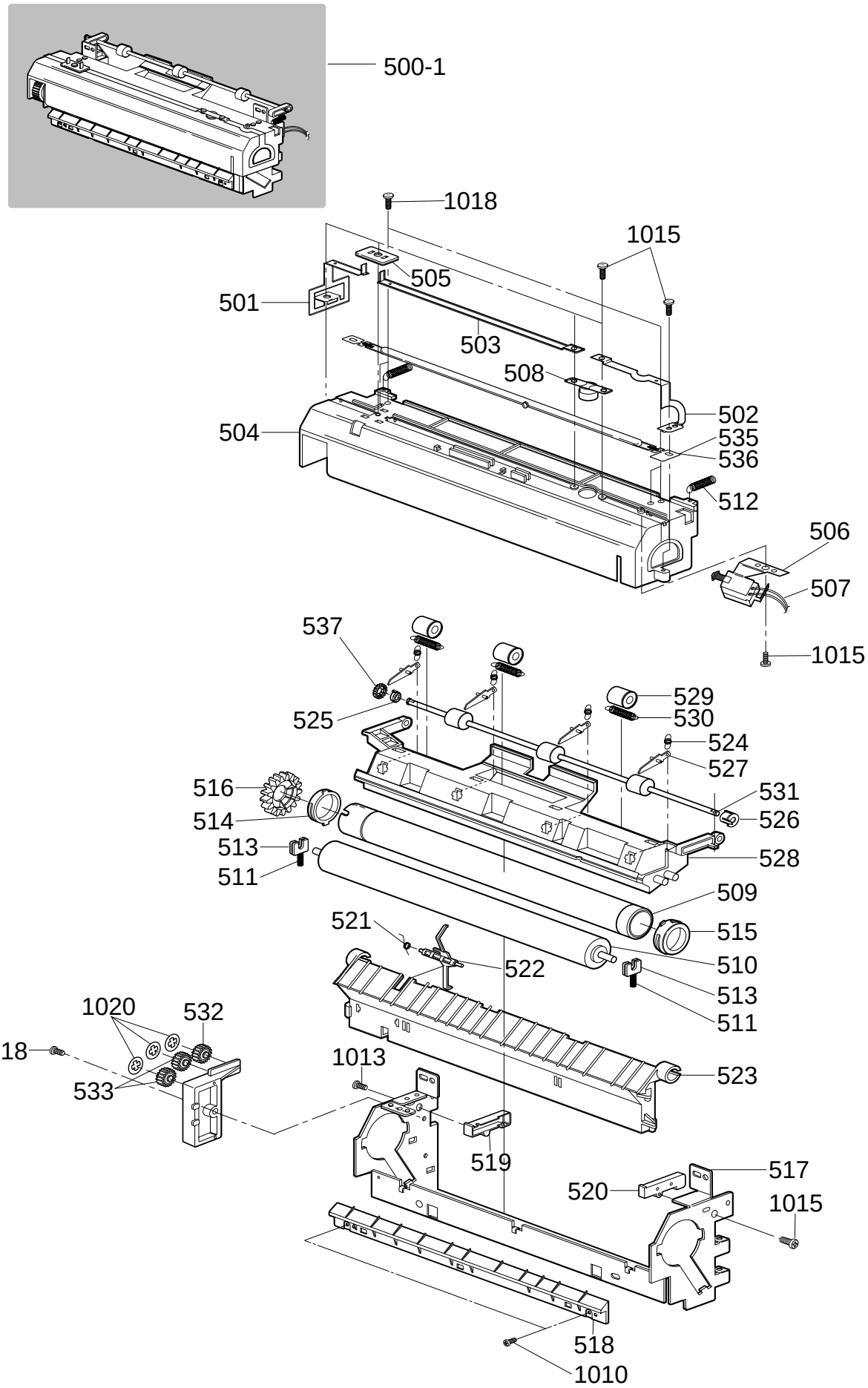
6-5-1. Pick Up Ass'y



6-5-2. Pick Up Ass'y Parts List

Location NO.	Description	SEC.Code	Q'ty	A/S	Remark
400	MEA RACK-PICK UP	JC97-01039A	1	O	
401	PMO-FRAME FEED	*	1	X	
403	IPR-PAPER GUIDE FEED	*	1	X	
404	BEARING-PICK UP	*	4	X	
405	PMO-HOUSING PICK UP	*	1	X	
406	RPR-RUBBER PICK UP	*	1	X	
407	ICT-SUB SHAFT P/UP	*	1	X	
408	ICT-SHAFT PICK UP	*	1	X	
409	GEAR-PICK UP	*	1	X	
410	PMO-FEED ROLL DRIVE	*	1	X	
411	ICT-SHAFT FEED	*	1	X	
412	GEAR-FEED	*	1	X	
413	PMO-HOLDER FEED S	*	1	X	
414	PMO-SUB HOLDER FEED	*	1	X	
415	IPR-SHAFT FEED IDLER	*	2	X	
416	PMO-ROLLER FEED L	*	2	X	
417	PMO-ROLLER FEED S	*	1	X	
418	SPRING-FEED SMALL	*	1	X	
419	PMO-HOLDER FEED L	*	1	X	
420	ICT-SHAFT IDLE LARGE	*	1	X	
421	SPRING-FEED LARGE	*	1	X	
424	GEAR-P/UP DRIVE	*	1	X	
425	WASHER-PLAIN	*	5	X	
1009	SCREW-TAPTITE	*	1	X	
1020	RING-CS	*	1	X	

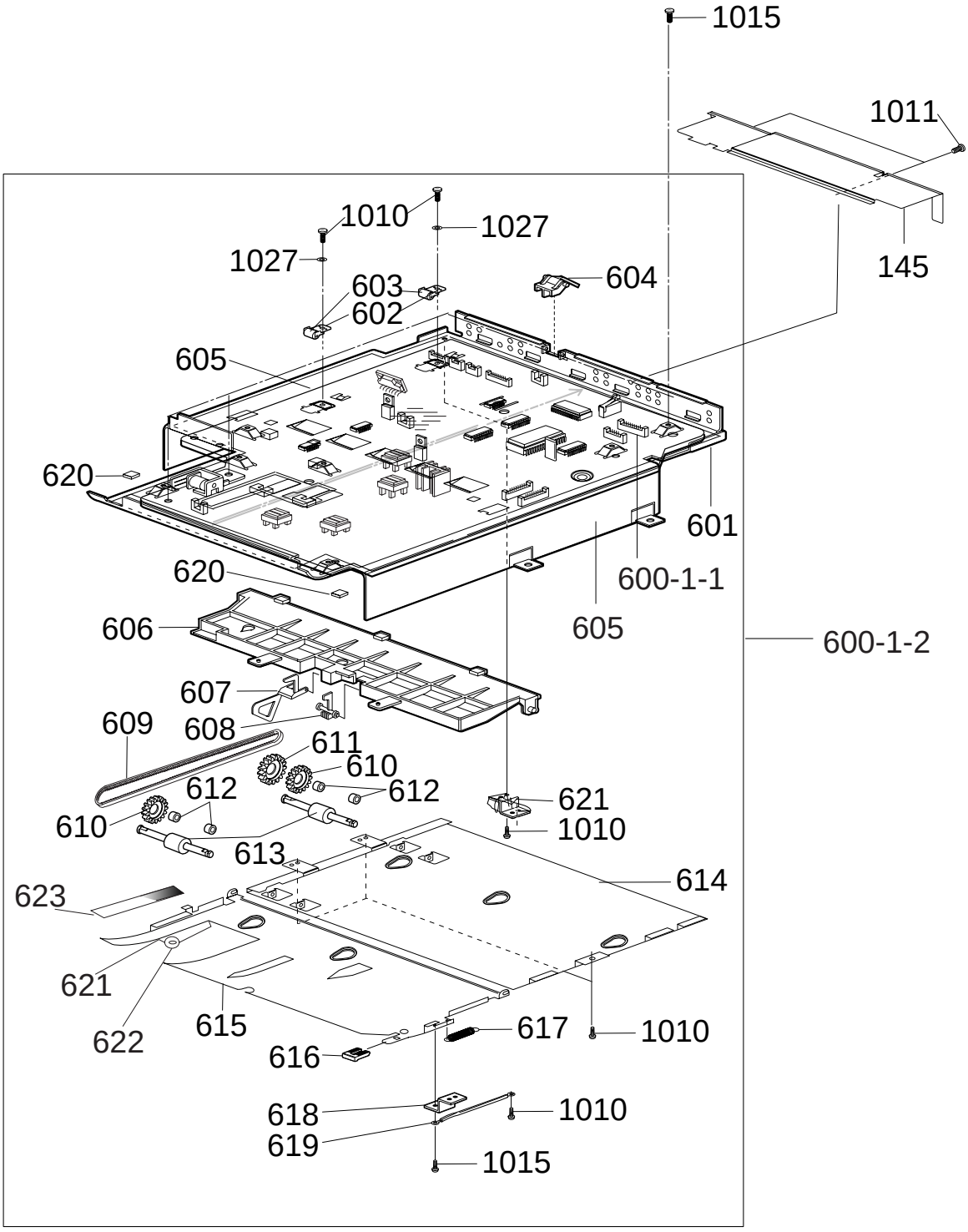
6-6-1. Fuser Ass'y



6-6-2. Fuser Ass'y Parts List

Location NO.	Description	SEC.Code	Q'ty	A/S	Remark
500-1	ELA HOU-FUSER 110V	JC96-01072A	1	O	
500-1	ELA HOU-FUSER 220V	JC96-01062A	1	O	
501	IPR-ELECTRODE FU/L	*	1	X	
502	IPR-ELECTRODE FU R	*	1	X	
503	IPR-ELECTRODE M	*	1	X	
504	PMO-COVER FUSER UP	*	1	X	
505	PMO-CAP TERMINAL	*	1	X	
506	IPR-SPR THERMISTOR	*	1	X	
507	THERMISTOR-NTC	1404-001121	1	O	
508	THERMOSTAT-150C	4712-000001	1	O	
509	RCT-ROLLER HEAT	JC73-30904A	1	O	
510	RCT-ROLLER PRESSURE	JC73-30903A	1	O	
511	SPRING-P/R	*	2	X	
512	SPRING-RAIL	*	2	X	
513	BEARING-PRESSURE/R	JC66-10901A	2	O	
514	BEARING-H/R L	JC66-10902A	1	O	
515	BEARING-H/R R	JC66-10903A	1	O	
516	GEAR-FUSER	JC66-40913A	1	O	
517	IPR-FRAME FUSER	*	1	X	
518	PMO-GUIDE FRONT	*	1	X	
519	PMO-RAIL FUSER L	*	1	X	
520	PMO-RAIL FUSER R	*	1	X	
521	SPRING-ACTUATOR	*	1	X	
522	PMO-ACTUATOR EXIT	*	1	X	
523	PMO-GUIDE REAR	*	1	X	
524	SPRING-SAPERATION	*	4	X	
525	BEARING-EXIT FU L	*	1	X	
526	BEARING-EXIT FU	*	1	X	
527	PMO-GUIDE CLAW	*	4	X	
528	PMO-COVER FUSER LOW	*	1	X	
529	ROLLER-EXIT	*	3	X	
530	SPRING-FUSER EXIT	*	3	X	
531	RCT-ROLLER EXIT FU	*	1	X	
532	"GEAR-EXIT/U,ID"	*	2	X	
533	"GEAR-EXIT,IDLE(Z17)"	*	2	X	
534	PMO-BRKT FUSER GEAR	*	1	X	
535	LAMP-HALOGEN 115V	4713-001073	1	O	
536	LAMP-HALOGEN 220V	4713-001072	1	O	
537	GEAR-EXIT	*	1	X	
1010	SCREW-TAPTITE	*	2	X	
1013	SCREW-TAPTITE	*	2	X	
1013	SCREW-TAPTITE	*	2	X	
1013	SCREW-TAPTITE	*	1	X	
1013	SCREW-TAPTITE	*	1	X	
1013	SCREW-TAPTITE	*	2	X	
1016	SCREW-TAPTITE	*	1	X	
1016	SCREW-TAPTITE	*	3	X	
1020	RING-CS	*	4	X	

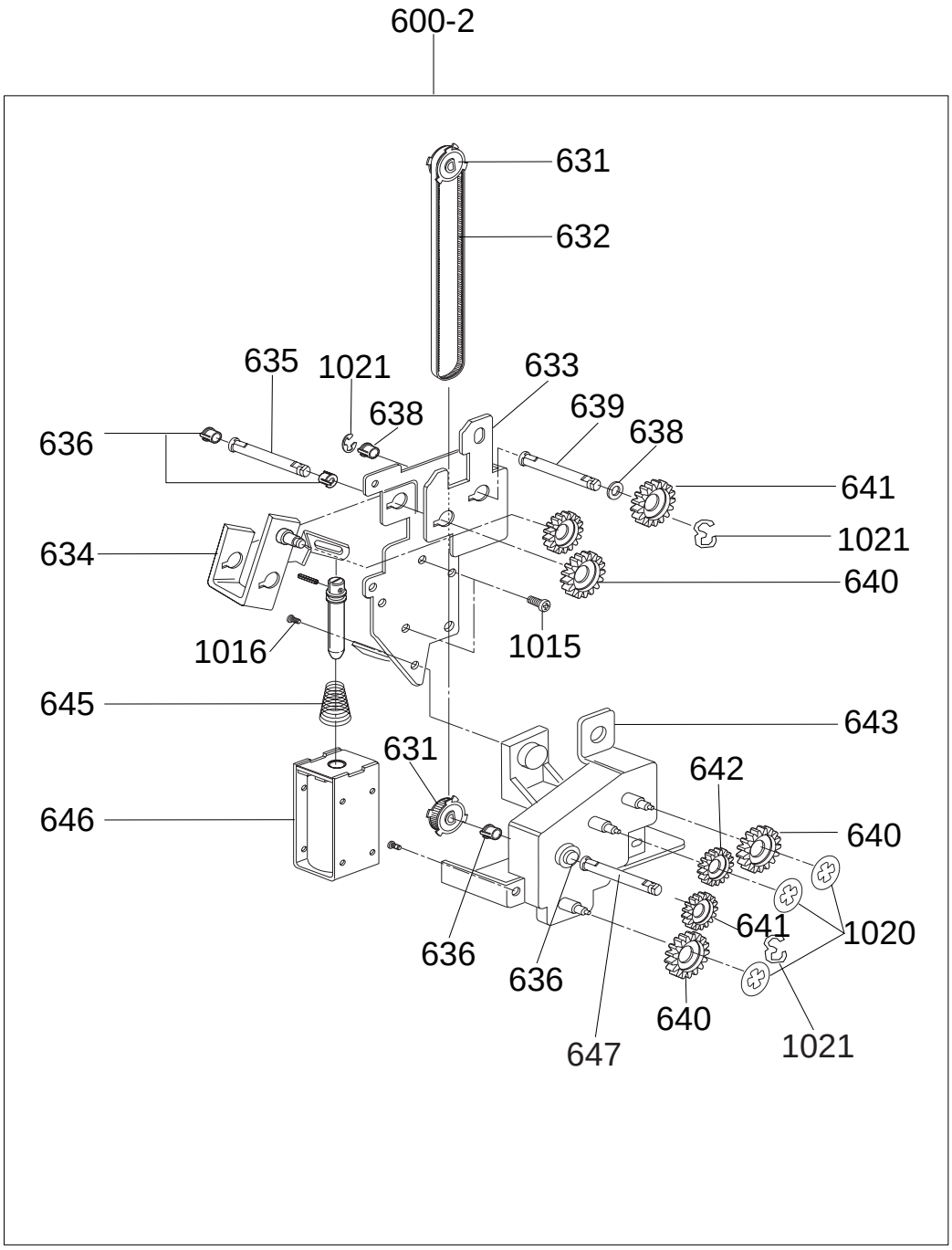
6-7-1. Shield Ass'y



6-7-2. Shield Ass'y Parts List

Location NO.	Description	SEC.Code	Q'ty	A/S	Remark
600-1	ELA HOU-ENGINE	JC96-01403B	1	O	
600-1-1	PBA MAIN-ENGINE	JC92-01100A	1	O	
600-1-2	MEA RACK-SHIELD PCU	JC97-01040B	1	O	
601	IPR-SHIELD PCB	*	1	X	
602	IPR-SPRING UPPER DP	*	2	X	
603	PMO-ROLLER UPPER DP	*	2	X	
606	PMO-GUIDE UPPER DP	*	1	X	
607	PMO-ACTUATOR EMPTY	*	1	X	
608	PMO-ACTUATOR FRONT DP	*	1	X	
609	BELT-TIMMING	*	1	X	
610	PMO-PULLEY DUPLEX	*	2	X	
611	GEAR-DUPLEX	*	1	X	
612	PMO-BEARING LARGE DP	*	4	X	
613	RCT-ROLLER LOWER DP	*	2	X	
614	IPR-GUIDE DUPLEX	*	1	X	
615	IPR-GUIDE FRONT DP	*	1	X	
616	PMO-LEVER OPEN DP	*	1	X	
617	SPRING-FRONT DP	*	1	X	
618	IPR-BRKT SUPPORTER	*	1	X	
619	CBF HARNESS-DPLX GND	*	1	X	
620	RPR-CUSHION GUIDE	*	1	X	
621	IPR-BRKT IDLE ROLLER	*	1	X	
622	PMO-IDLE ROLLER	*	1	X	
623	IPR-SHEET FRONT DP	*	1	X	
1010	SCREW-TAPTITE	*	2	X	
1010	SCREW-TAPTITE	*	1	X	
1010	SCREW-TAPTITE	*	4	X	
1015	SCREW-TAPTITE	*	3	X	
605	PPR-INSULATOR PCU	*	1	X	

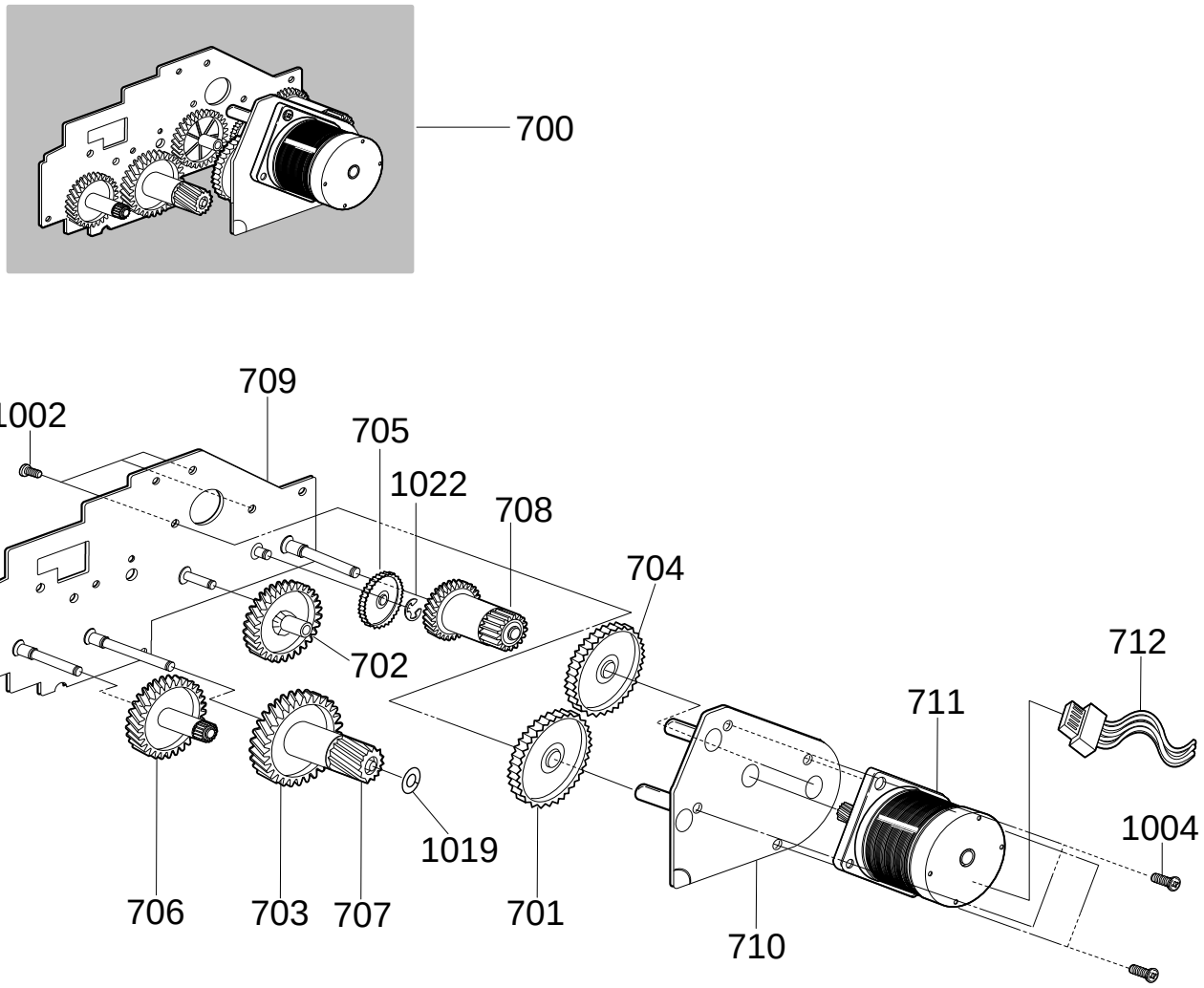
6-8-1. Bracket Duplex Ass'y



6-8-2. Bracket Duplex Ass'y Parts List

Location NO.	Description	SEC.Code	Q'ty	A/S	Remark
600-2	ELA HOU-BRKT DUPLEX	JC96-01056A	1	O	
631	PMO-PULLEY DUPLEX	*	2	X	
632	BELT-TIMMING	*	1	X	
633	IPR-BRKT DUPLEX	*	1	X	
634	IPR-LINK DUPLEX	*	1	X	
635	ICT-SHAFT SWING	*	1	X	
636	PMO-BEARING LARGE DP	*	4	X	
638	"PMO-BEARING SMALL,DP"	*	2	X	
639	ICT-SHAFT BELT	*	1	X	
640	"GEAR-DP,IDLE"	*	2	X	
641	GEAR-DUPLEX	*	2	X	
642	"GEAR-EXIT/U,ID"	*	1	X	
643	PMO-BRKT GEAR LOWER	*	1	X	
645	SPRING-SOLENOID DP	*	1	X	
646	SOLENOID-DUPLEX	*	1	X	
647	ICT-SHAFT BELT2	*	1	X	
1015	SCREW-TAPTITE	*	1	X	
1015	SCREW-TAPTITE	*	2	X	
1020	RING-CS	*	3	X	
1021	RING-E	*	3	X	
1029	SCREW-TAPTITE	*	1	X	

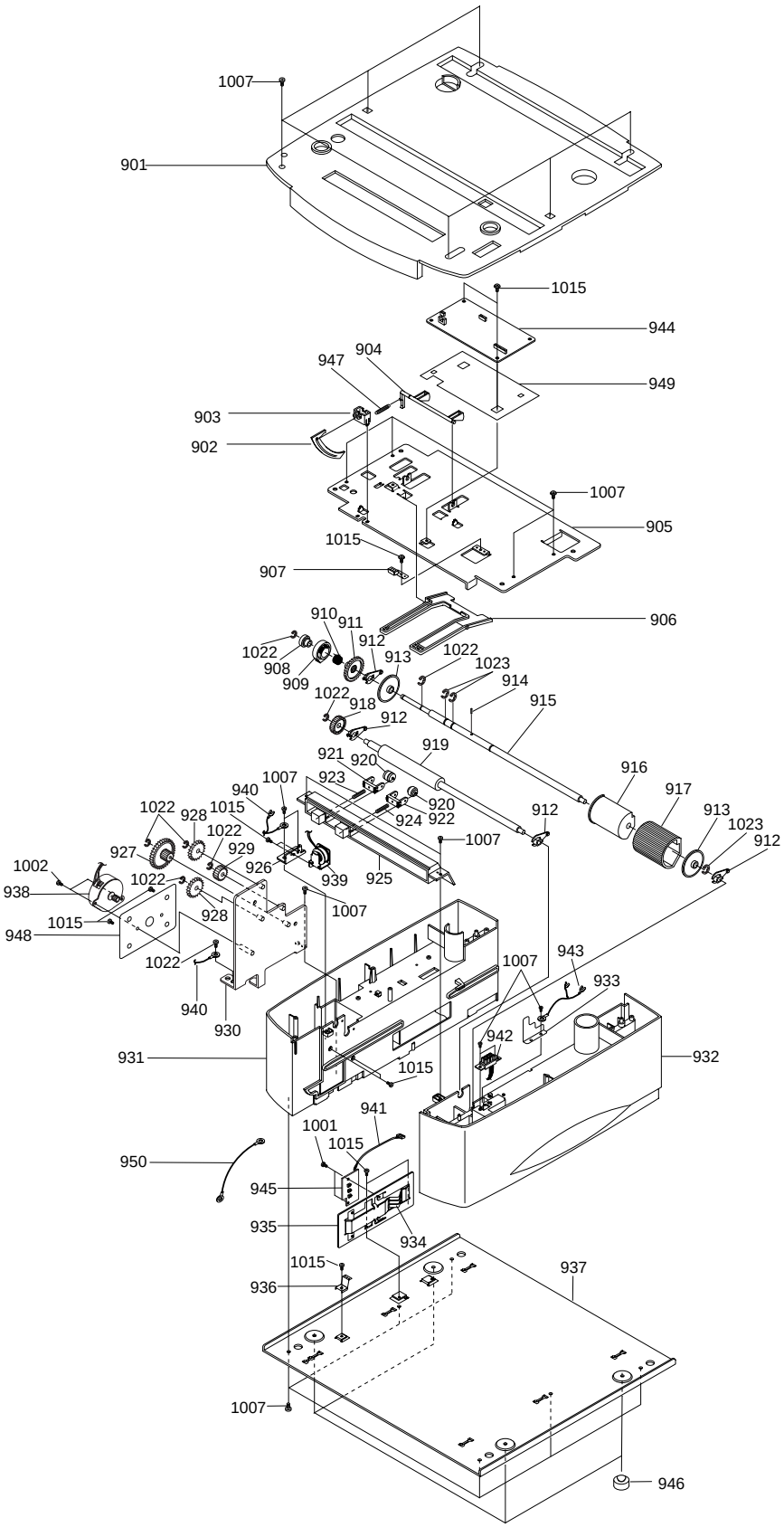
6-9-1. Bracket Motor Ass'y



6-9-2. Bracket Motor Parts List

Location NO.	Description	SEC.Code	Q'ty	A/S	Remark
700	ELA HOU-BRKT MOTOR	JC96-01058B	1	O	
701	"GEAR-IDLE 142,X"	*	1	X	
702	"GEAR-66/25,X"	*	1	X	
703	GEAR-OPC DRIVE(12)	*	1	X	
704	GEAR-125/18	*	1	X	
705	GEAR-IDLE FU	*	1	X	
706	GEAR-FEED DRIVE	*	1	X	
707	GEAR-OPC DRV2	*	1	X	
708	GEAR-FUSER DRIVE	*	1	X	
709	IPR-BRKT GEAR	*	1	X	
710	"ICT-BRK MOTOR,X"	*	1	X	
711	MOTOR-STEP	3101-001152	1	O	
1002	SCREW-MACHINE	*	3	X	
1004	SCREW-MACHINE	*	2	X	
1019	WASHER-PLAIN	*	1	X	
1019	WASHER-PLAIN	*	1	X	
1022	RING-E	*	1	X	

6-10-1. Frame SCF Ass'y

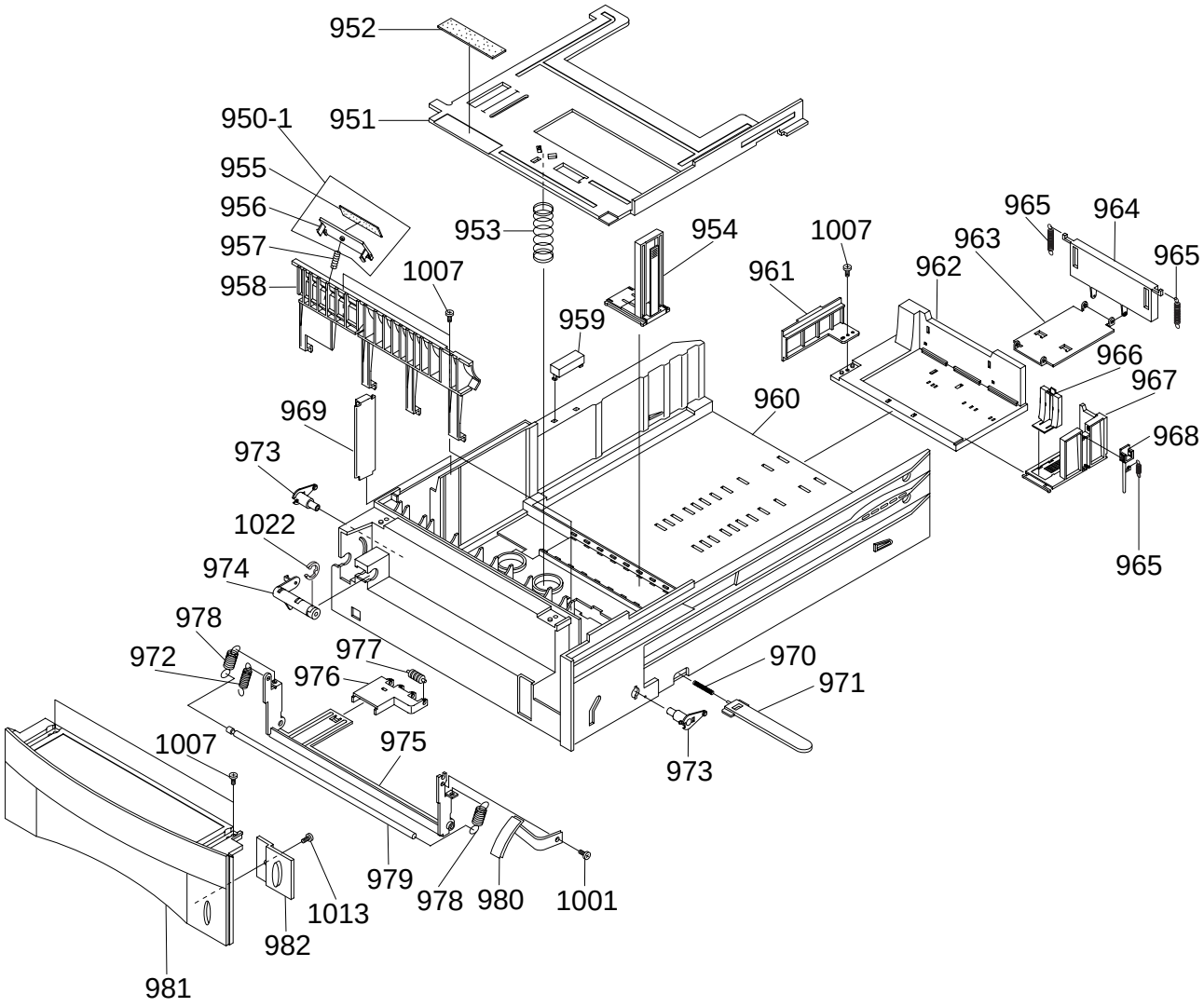


6-10-2. Frame SCF Ass'y Parts List

Location NO.	Description	SEC.Code	Q'ty	A/S	Remark
900	MEA RACK-SCF ASS'Y	*	1	X	
900-1	MEA RACK-FRAME SCF	*	1	X	
901	PMO FRAME TOP	*			
902	PMO-SENSOR LEVER	*	1	X	
903	PMO-SENSOR FRAME	*	1	X	
904	PMO-ARM ENV	*	1	X	
905	IPR-CASE TOP	*	1	X	
906	PMO-GUIDE ENV	*	1	X	
907	IPR-GROUND TOP	*	1	X	
908	PMO-HUB_CLUTCH	*	1	X	
909	PMO-COLLAR_CLUTCH_PI	*	1	X	
910	"SPRING-TS, CLUTCH"	*	1	X	
911	GEAR-P/UP OPTION	*	1	X	
912	PMO-BEARING SHAFT	*	3	X	
912	PMO-BEARING SHAFT	*	1	X	
913	PMO-IDLE PICKUP	*	1	X	
914	"ICT-PIN_PARELLED,P/U"	*	1	X	
915	ICT-SHAFT PICK UP	*	1	X	
916	PMO-P/UP HOUSING	*	1	X	
917	RPR-PICK UP ROLL	*	1	X	
918	GEAR-FEED (SCF)	*	1	X	
919	RPR-FEED ROLLER	*	1	X	
920	PMO-IDLE FEED	*	2	X	
921	PMO-IDLE FRAME	*	1	X	
922	PMO-IDLE FRAME1	*	1	X	
923	SPRING-IDLE 1	*	1	X	
924	SPRING-IDLE 2	*	1	X	
925	PMO-GUIDE PAPER2	*	1	X	
926	IPR-SCF SOLENOID	*	1	X	
927	GEAR-IDLE(SCF)	*	1	X	
928	GEAR-IDLE(Z=30)	*	2	X	
929	GEAR-IDLE 19	*	1	X	
930	IPR-SCF MOTOR	*	1	X	
931	PMO-FRAME LEFT	*	1	X	
932	PMO-FRAME RIGHT	*	1	X	
933	IPR-GROUND FEED	*	1	X	
934	IPR-PUSH PLT SPRING	*	1	X	
935	IPR-BRKT PAPER SIZE	*	1	X	
936	IPR-GROUND BOTTOM	*	1	X	
937	IPR-CASE BOTTOM	*	1	X	
938	MOTOR-SCF	*	1	X	
939	SOLENOID-MAGNET	*	1	X	
940	CBF HARNESS-SCF MOT	*	1	X	
941	CBF HARNESS-SCF CST	*	1	X	
942	CBF HARNESS-SCF OPT	*	1	X	
943	CBF HARNESS-SCF FEED	*	1	X	
944	PBA SUB-SCF OPT	*	1	X	
945	PBA SUB-CASSETTE	*	1	X	
946	FOOT-RUBBER SCF	*	4	X	
947	"SPRING-IDLE,SCF"	*	1	X	
948	IPR-SCF MOTOR 1	*	1	X	
949	IPR-INSULATOR SCF	*	1	X	
950	CBF HARNESS-SCF GND	*	1	X	
1001	SCREW-MACHINE	*	2	X	
1002	SCREW-MACHINE	*	3	X	

Location NO.	Description	SEC.Code	Q'ty	A/S	Remark
1007	SCREW-TAPTITE	*	2	X	
1007	SCREW-TAPTITE	*	2	X	
1007	SCREW-TAPTITE	*	6	X	
1007	SCREW-TAPTITE	*	1	X	
1007	SCREW-TAPTITE	*	2	X	
1007	SCREW-TAPTITE	*	6	X	
1007	SCREW-TAPTITE	*	2	X	
1007	SCREW-TAPTITE	*	4	X	
1015	SCREW-TAPTITE	*	1	X	
1015	SCREW-TAPTITE	*	1	X	
1015	SCREW-TAPTITE	*	2	X	
1015	SCREW-TAPTITE	*	2	X	
1015	SCREW-TAPTITE	*	2	X	
1015	SCREW-TAPTITE	*	2	X	
1015	SCREW-TAPTITE	*	1	X	
1015	SCREW-TAPTITE	*	2	X	
1015	SCREW-TAPTITE	*	4	X	
1022	RING-E	*	1	X	
1022	RING-E	*	4	X	
1022	RING-E	*	2	X	
1023	RING-E	*	3	X	

6-11-1. Cassette SCF Ass'y



6-11-2. Cassette SCF Ass'y Parts List

Location NO.	Description	SEC.Code	Q'ty	A/S	Remark
950	MEA RACK-CAST SCF	*	1	X	
951	IPR-KNOCK UP(SCF)	*	1	X	
952	RPR-CORK KNOCKUP	*	1	X	
953	SPRING-SCF K/UP	*	1	X	
954	PMO-GUIDE SIDE	*	1	X	
955	RPR-CORK PAD	*	1	X	
956	PMO-FRAME PAD	*	1	X	
957	SPRING-PAD	*	1	X	
958	PMO-GUIDE PAPER1	*	1	X	
959	PMO-DUMMY ENV	*	1	X	
963	IPR-PLATE LEVER	*	1	X	
964	PMO-LEVER REAR	*	1	X	
965	"SPRING-IDLE,SCF"	*	3	X	
966	PMO-GUIDE REAR3	*	1	X	
967	PMO-GUIDE REAR2	*	1	X	
968	PMO-GUIDE LOCK	*	1	X	
969	IPR-PLATE PAPER	*	1	X	
970	"SPRING-LOCKER,PLATE"	*	1	X	
971	PMO-LOCKER PLATE	*	1	X	
972	SPRING-SCF LEVER	*	1	X	
973	PMO-BUSH K/UP	*	2	X	
974	PMO-LINK LEVER	*	1	X	
975	IPR-PLATE SUB K/UP	*	1	X	
976	PMO-CAP PLATE K/UP	*	1	X	
977	PMO-ROLLER FD R	*	1	X	
978	SPRING-SUB PLATE	*	2	X	
979	ICT-SHAFT SPR K/UP	*	1	X	
980	PMO-LEVER PAPER S	*	1	X	
981	PMO-SUB GUIDE CAST	*	1	X	
982	PMO-WINDOW PAPER	*	1	X	
1001	SCREW-MACHINE	*	1	X	
1007	SCREW-TAPTITE	*	1	X	
1007	SCREW-TAPTITE	*	2	X	
1007	SCREW-TAPTITE	*	2	X	
1013	SCREW-TAPTITE	*	1	X	
1022	RING-E	*	1	X	
950-1	MEA-RACK FRAME PAD	*	1	X	

7. Electrical Parts Lists

7-1. Main Engine PBA

SEC CODE	LOCATION NO.	Q'ty	DESCRIPTION	
JC92-01100A			**PBA MAIN-ENGINE**	
0401-000005	"D1,D2,D3,D4,D5"	5	DIODE-SWITCHING	"1N4148,100V,200MA,DO-35,TP"
0401-000005	"D18,D20,D24,D26"	4	DIODE-SWITCHING	"1N4148,100V,200MA,DO-35,TP"
0401-000005	"D50~D504,D506"	5	DIODE-SWITCHING	"1N4148,100V,200MA,DO-35,TP"
0401-000005	"D507~D511"	5	DIODE-SWITCHING	"1N4148,100V,200MA,DO-35,TP"
0401-000005	"D513,D514"	2	DIODE-SWITCHING	"1N4148,100V,200MA,DO-35,TP"
0401-000005	"D7,D8,D9,D10,D11"	5	DIODE-SWITCHING	"1N4148,100V,200MA,DO-35,TP"
0402-000129	"D6,D12,D13,D505,D512"	5	DIODE-RECTIFIER	"1N4003,200V,1A,DO-41,TP"
0402-000468	"D19,D22,D23,D25"	4	DIODE-RECTIFIER	"ESJS58-06,6KV,2mA,DO-201"
0402-001193	"D14,D15,D16,D17,D21"	5	DIODE-RECTIFIER	"SHV-04,4KV,20mA,-,TP"
0403-000356	"ZD2,ZD4,ZD6,ZD7"	4	DIODE-ZENER	"UZ5.6BCB,5.6V,5.46-5.7V,500mW,"
0403-000475	ZD1	1	DIODE-ZENER	"1N5274B,130V,5%,500mW,DO-35,TP"
0403-000554	ZD3	1	DIODE-ZENER	"UZ7.5BM,7.2-7.7V,500mW,DO-35,T"
0403-001104	ZD5	1	DIODE-ZENER	"1N5281B,5%,500MW,DO-35,TP"
0501-000010	"Q1,Q4,Q6,Q8,Q9"	5	TR-SMALL SIGNAL	"KSC1008,NPN,800mW,TO-92,TP,120"
0501-000010	"Q10,Q11,Q12,Q17,Q18"	5	TR-SMALL SIGNAL	"KSC1008,NPN,800mW,TO-92,TP,120"
0501-000010	"Q501,Q503"	2	TR-SMALL SIGNAL	"KSC1008,NPN,800mW,TO-92,TP,120"
0501-000294	"Q2,Q3,Q5"	3	TR-SMALL SIGNAL	"KSA708-Y,PNP,800mW,TO-92,TP,12"
0502-001048	Q7	1	TR-POWER	"KSD1691,NPN,1.3W,TO-126,BK,160"
0502-001124	"Q13,Q16"	2	TR-POWER	"KSD526,NPN,30W,TO-220,BK,120-2"
0604-001033	"OP2,OP3"	2	PHOTO-INTERRUPTER	"TR,-,150mW,DIP-4,ST"
0604-001093	OP1	1	PHOTO-INTERRUPTER	"TR,-,75mW,DIP-4,BK"
0604-001106	"OP4,OP5"	2	PHOTO-INTERRUPTER	"TR,25%-,-,-,BK"
0801-000019	U10	1	IC-CMOS LOGIC	"74HC10,NAND GATE,DIP,14P,300MI"
0801-000528	U11	1	IC-CMOS LOGIC	"74HCT574,D FLIP-FLOP,DIP,20P,3"
0801-000722	"U6,U7"	2	IC-CMOS LOGIC	"74HC245,TRANSCEIVER,DIP,20P,30"
0801-001262	U3	1	IC-CMOS LOGIC	"74HC4060,BINARY COUNTER,DIP,16"
0803-000679	U5	1	IC-TTL	"7406,BUFFER/DRIVER,DIP,14P,300"
0903-000219	U8	1	IC-MICROCOMPUTER	"88C4316,8BIT,DIP,64P,-,8MHz,ST"
1003-001152	U2	1	IC-MOTOR DRIVER	"SLA7026M(LF871),ZIP,18P,-,SING"
1103-001045	U9	1	IC-EEPROM	"27E512,64Kx8BIT,DIP,28P,600MIL"
1201-000229	U4	1	IC-OP AMP	"324,DIP,14P,300MIL,QUAD,100V/m"
1202-000103	U12	1	IC-VOLTAGE COMP.	"393,DIP,8P,300MIL,DUAL,36V,CMO"
1203-000258	U1	1	IC-POSI.FIXED REG.	"7818,TO-220,3P,-,PLASTIC,17.3/"
1404-001141	TH501	1	THERMISTOR-NTC	"5.6Kohm,5%,3200K,2.1mW/C,TP"
2001-000003	"R145,R146,R167"	3	R-CARBON	"330ohm,5%,1/8W,AA,TP,1.8x3.2mm"
2001-000003	"R40,R41,R42,R43,R135"	5	R-CARBON	"330ohm,5%,1/8W,AA,TP,1.8x3.2mm"
2001-000005	"R113,R130,R133"	3	R-CARBON	"390ohm,5%,1/8W,AA,TP,1.8x3.2mm"
2001-000006	"R1,R9"	2	R-CARBON	"2.4KOHM,5%,1/8W,AA,TP,1.8X3.2MM"
2001-000008	"R154,R156,R159,R505"	4	R-CARBON	"15KOHM,5%,1/8W,AA,TP,1.8X3.2MM"
2001-000008	"R25,R80,R86,R89,R105"	5	R-CARBON	"15KOHM,5%,1/8W,AA,TP,1.8X3.2MM"
2001-000012	R16	1	R-CARBON	"680KOHM,5%,1/8W,AA,TP,1.8X3.2MM"
2001-000019	"R122,R129"	2	R-CARBON(S)	"10OHM,5%,1/2W,AA,TP,2.4X6.4MM"
2001-000085	"R162,R163,R180"	3	R-CARBON(S)	"100KOHM,5%,1/2W,AA,TP,2.4X6.4MM"
2001-000096	"R48,R82,R91,R92,R116"	5	R-CARBON(S)	"1MOHM,5%,1/2W,AA,TP,2.4X6.4MM"
2001-000221	R72	1	R-CARBON	"1.2KOHM,5%,1/8W,AA,TP,1.8X3.2MM"
2001-000273	"R56,R100"	2	R-CARBON	"100KOHM,5%,1/8W,AA,TP,1.8X3.2MM"
2001-000281	"R110,R134,R165,R166,R178"	5	R-CARBON	"100OHM,5%,1/8W,AA,TP,1.8X3.2MM"
2001-000281	"R179,R508"	2	R-CARBON	"100OHM,5%,1/8W,AA,TP,1.8X3.2MM"
2001-000281	"R26,R49,R71,R81"	4	R-CARBON	"100OHM,5%,1/8W,AA,TP,1.8X3.2MM"
2001-000281	"R87,R88,R95,R102,R103"	5	R-CARBON	"100OHM,5%,1/8W,AA,TP,1.8X3.2MM"
2001-000290	"R101,R111,R121,R139,R141"	5	R-CARBON	"10KOHM,5%,1/8W,AA,TP,1.8X3.2MM"
2001-000290	"R142,R143,R181,R182,R183"	5	R-CARBON	"10KOHM,5%,1/8W,AA,TP,1.8X3.2MM"
2001-000290	"R19,R20,R21,R22,R27"	5	R-CARBON	"10KOHM,5%,1/8W,AA,TP,1.8X3.2MM"
2001-000290	"R30,R37,R39,R46,R58"	5	R-CARBON	"10KOHM,5%,1/8W,AA,TP,1.8X3.2MM"
2001-000290	R50	1	R-CARBON	"10KOHM,5%,1/8W,AA,TP,1.8X3.2MM"
2001-000290	R509	1	R-CARBON	"10KOHM,5%,1/8W,AA,TP,1.8X3.2MM"
2001-000290	"R59,R60,R74,R75,R76"	5	R-CARBON	"10KOHM,5%,1/8W,AA,TP,1.8X3.2MM"
2001-000290	"R77,R93,R94,R96,R97"	5	R-CARBON	"10KOHM,5%,1/8W,AA,TP,1.8X3.2MM"
2001-000362	"R155,R175,R506"	3	R-CARBON	"150OHM,5%,1/8W,AA,TP,1.8X3.2MM"
2001-000362	"R24,R79,R85,R90,R104"	5	R-CARBON	"150OHM,5%,1/8W,AA,TP,1.8X3.2MM"
2001-000429	R157	1	R-CARBON	"1KOHM,5%,1/8W,AA,TP,1.8X3.2MM"
2001-000429	R32	1	R-CARBON	"1KOHM,5%,1/8W,AA,TP,1.8X3.2MM"
2001-000429	"R61,R73,R78,R107,R140"	5	R-CARBON	"1KOHM,5%,1/8W,AA,TP,1.8X3.2MM"

Main Engine PBA

SEC CODE	LOCATION NO.	Q'ty	DESCRIPTION	
2001-000449	"R33,R47,R125,R126"	4	R-CARBON	"2.2KOHM,5%,1/8W,AA,TP,1.8X3.2MM"
2001-000515	"R108,R109,R120,R138"	4	R-CARBON	"220OHM,5%,1/8W,AA,TP,1.8X3.2MM"
2001-000522	R70	1	R-CARBON	"22KOHM,5%,1/8W,AA,TP,1.8X3.2MM"
2001-000563	R67	1	R-CARBON	"27KOHM,5%,1/8W,AA,TP,1.8X3.2MM"
2001-000660	"R15,R38"	2	R-CARBON	"33KOHM,5%,1/8W,AA,TP,1.8X3.2MM"
2001-000734	R177	1	R-CARBON	"4.7KOHM,5%,1/8W,AA,TP,1.8X3.2MM"
2001-000761	R164	1	R-CARBON	"430OHM,5%,1/8W,AA,TP,1.8X3.2MM"
2001-000786	"R117,R151"	2	R-CARBON	"47KOHM,5%,1/8W,AA,TP,1.8X3.2MM"
2001-000786	"R2,R10,R14,R53,R114"	5	R-CARBON	"47KOHM,5%,1/8W,AA,TP,1.8X3.2MM"
2001-000812	R158	1	R-CARBON	"5.6KOHM,5%,1/8W,AA,TP,1.8X3.2MM"
2001-000812	"R45,R62,R63,R144,R170"	5	R-CARBON	"5.6KOHM,5%,1/8W,AA,TP,1.8X3.2MM"
2001-000812	R501	1	R-CARBON	"5.6KOHM,5%,1/8W,AA,TP,1.8X3.2MM"
2001-000832	"R112,R176"	2	R-CARBON	"510OHM,5%,1/8W,AA,TP,1.8X3.2MM"
2001-000832	"R51,R52,R64,R84"	4	R-CARBON	"510OHM,5%,1/8W,AA,TP,1.8X3.2MM"
2001-000864	R150	1	R-CARBON	"56KOHM,5%,1/8W,AA,TP,1.8X3.2MM"
2001-000935	R502	1	R-CARBON	"68OHM,5%,1/4W,AA,TP,2.4X6.4MM"
2001-001015	R69	1	R-CARBON	"9.1KOHM,5%,1/8W,AA,TP,1.8X3.2MM"
2001-001119	"R115,R123,R124"	3	R-CARBON(S)	"3.3MOHM,5%,1/2W,AA,TP,2.4X6.4MM"
2001-001145	"R131,R132,R147,R173,R186"	5	R-CARBON(S)	"4.7MOHM,5%,1/2W,AA,TP,2.4X6.4MM"
2001-001165	"R98,R99"	2	R-CARBON(S)	"56OHM,5%,1/2W,AA,TP,2.4X6.4MM"
2001-001252	"R136,R152,R153,R160,R161"	5	R-CARBON(S)	"2MOHM,5%,1/2W,AA,TP,2.4X6.4MM"
2003-000005	R149	1	R-METAL OXIDE(S)	"1ohm,5%,2W,AA,TP,4x12mm"
2003-002116	"R7,R8"	2	R-METAL OXIDE(S)	"0.68ohm,5%,3W,AA,TP,15x5.5mm"
2003-002166	"R28,R29"	2	R-METAL OXIDE(S)	"100OHM,5%,1W,AA,TP,2.4X6.4MM"
2004-000002	"R31,R34"	2	R-METAL	"78.7Kohm,1%,1/8W,AA,TP,1.8x3.2"
2004-000003	R57	1	R-METAL	"16.2Kohm,1%,1/8W,AA,TP,1.8x3.2"
2004-000218	R127	1	R-METAL	"10Kohm,1%,1/8W,AA,TP,1.8x3.2mm"
2004-000269	R23	1	R-METAL	"120ohm,1%,1/8W,AA,TP,1.8x3.2mm"
2004-000342	R65	1	R-METAL	"158Kohm,1%,1/8W,AA,TP,1.8x3.2m"
2004-000345	R54	1	R-METAL	"15Kohm,1%,1/8W,AA,TP,1.8x3.2mm"
2004-000385	"R6,R171"	2	R-METAL	"17.4Kohm,1%,1/8W,AA,TP,1.8x3.2"
2004-000517	R169	1	R-METAL	"200Kohm,1%,1/8W,AA,TP,1.8x3.2m"
2004-000544	R17	1	R-METAL	"21.5Kohm,1%,1/8W,AA,TP,1.8x3.2"
2004-000628	R119	1	R-METAL	"26.1Kohm,1%,1/8W,AA,TP,1.8x3.2"
2004-000699	R172	1	R-METAL	"3.3Kohm,1%,1/8W,AA,TP,1.8x3.2m"
2004-000754	R106	1	R-METAL	"309Kohm,1%,1/8W,AA,TP,1.8x3.2m"
2004-000965	R18	1	R-METAL	"470Kohm,1%,1/8W,AA,TP,1.8x3.2m"
2004-000981	R137	1	R-METAL	"47Kohm,1%,1/8W,AA,TP,1.8x3.2mm"
2004-001023	R36	1	R-METAL	"5.6Kohm,1%,1/8W,AA,TP,1.8x3.2m"
2004-001052	R44	1	R-METAL	"510ohm,1%,1/8W,AA,TP,1.8x3.2mm"
2004-001156	R3	1	R-METAL	"619Kohm,1%,1/8W,AA,TP,1.8x3.2m"
2004-001231	"R5,R12,R55"	3	R-METAL	"75Kohm,1%,1/8W,AA,TP,1.8x3.2mm"
2004-001315	R66	1	R-METAL	"86.6Kohm,1%,1/8W,AA,TP,1.8x3.2"
2004-001357	R68	1	R-METAL	"93.1Kohm,1%,1/8W,AA,TP,1.8x3.2"
2004-002001	"R11,R13,R168"	3	R-METAL	"12.1Kohm,1%,1/8W,AA,TP,1.8x3.2"
2004-004234	"R4,R35"	2	R-METAL	"56.2Kohm,1%,1/8W,AA,TP,1.8x3.2"
2009-001082	R148	1	R-METAL GLAZE	"30Mohm,2%,2W,-,BK,30x8.5mm"
2009-001083	R174	1	R-METAL GLAZE	"200Mohm,2%,1/2W,CM,BK,18x6mm"
2009-001084	R118	1	R-METAL GLAZE	"30Mohm,2%,0.5W,CM,BK,18x6mm"
2009-001085	R128	1	R-METAL GLAZE	"10Mohm,3%,1/2W,CM,BK,18x4mm"
2103-000156	VR2	1	VR-SEMI	"10Kohm,10%,1/2W,TOP"
2103-000270	"VR1,VR3"	2	VR-SEMI	"20Kohm,10%,1/2W,TOP"
2201-000003	"C50,C58"	2	"C-CERAMIC,DISC"	"68pF,10%,2KV,SL,TP,8x5,5"
2201-000004	C70	1	"C-CERAMIC,DISC"	"100pF,10%,2KV,SL,TP,8x5,5"
2201-000017	"C105,C108"	2	"C-CERAMIC,DISC"	"1nF,10%,50V,Y5P,TP,4x3.5,5"
2201-000017	"C48,C73,C74,C78,C93"	5	"C-CERAMIC,DISC"	"1nF,10%,50V,Y5P,TP,4x3.5,5"
2201-000017	"C7,C36,C37,C39,C42"	5	"C-CERAMIC,DISC"	"1nF,10%,50V,Y5P,TP,4x3.5,5"
2201-000017	"C94,C100,C101,C102,C103"	5	"C-CERAMIC,DISC"	"1nF,10%,50V,Y5P,TP,4x3.5,5"
2201-000019	C53	1	"C-CERAMIC,DISC"	"10nF,+80-20%,500V,Y5V,TP,13.5x"
2201-000119	"C10,C11,C21,C31,C32"	5	"C-CERAMIC,DISC"	"100nF,+80-20%,50V,Y5V,TP,8x3.5"
2201-000119	"C35,C38,C41,C43,C47"	5	"C-CERAMIC,DISC"	"100nF,+80-20%,50V,Y5V,TP,8x3.5"
2201-000119	"C49,C60,C64,C66"	4	"C-CERAMIC,DISC"	"100nF,+80-20%,50V,Y5V,TP,8x3.5"
2201-000119	C505	1	"C-CERAMIC,DISC"	"100nF,+80-20%,50V,Y5V,TP,8x3.5"
2201-000119	"C72,C75,C81,C85,C88"	5	"C-CERAMIC,DISC"	"100nF,+80-20%,50V,Y5V,TP,8x3.5"
2201-000119	"C90,C107,C501,C503,C504"	5	"C-CERAMIC,DISC"	"100nF,+80-20%,50V,Y5V,TP,8x3.5"
2201-000138	"C27,C28,C54,C56,C83"	5	"C-CERAMIC,DISC"	"100pF,10%,50V,Y5P,TP,4.0X4.0,2"
2201-000138	"C91,C95,C104"	3	"C-CERAMIC,DISC"	"100pF,10%,50V,Y5P,TP,4.0X4.0,2"

7-2. Main CONTROLLER PBA

SEC CODE	LOCATION NO.	Q'ty	DESCRIPTION	
JC92-01182A			**PBA MAIN CTRL-CONTROLLER 7050**	
0801-001072	"U5,U6,U29"	3	IC-CMOS LOGIC	"74ACT32,OR GATE,SOP,14P,150MIL"
0803-000117	"U24,U26"	2	IC-TTL	"74F14,INVERTER,SOP,14P,150MIL,"
0803-000207	U27	1	IC-TTL	"74F08,AND GATE,SOP,14P,150MIL,"
0803-000270	U7	1	IC-TTL	"74F04,INVERTER,SOP,14P,150MIL,"
0803-000303	U20	1	IC-TTL	"74F74,D FLIP-FLOP,SOP,14P,150M"
0803-001381	"U4,U12"	2	IC-TTL	"74F273,D FLIP-FLOP,SOP,20P,300"
0803-003058	U8	1	IC-TTL	"74F1071,ESD,SOP,20P,-,-,TP,PLA"
1006-000243	"U9,U15"	2	IC-LINE TRANSCEIVER	"74ACT245,SOP,20P,-,OCTAL,ST,PL"
1103-000133	U1	1	IC-EEPROM	"93C66,256x16BIT,SOP,8P,150MIL,"
1105-001025	CN8	1	IC-DRAM MODULE	"5322204,2Mx32BIT,SIMM,72P,-,60"
1105-001213	"U19,U22"	2	IC-DRAM	"416C1204,1Mx16BIT,SOJ,42P,400M"
1107-001077	"U2,U13"	2	IC-FLASH MEMORY	"29F800,512Kx16BIT,SOP,44P,512M"
1203-000346	U28	1	IC-VOL. SUPERVISORY	"7705,SOP,8P,150MIL,PLASTIC,20V"
1203-001026	"U16,U17"	2	IC-POSI.FIXED K,3P,265MIL,PLASTIC,3.37/3.33V40TO+150C,800MA,ST"	
2007-000029	R102	1	R-CHIP	"0OHM,5%,1/10W,DA,TP,2012"
2007-000029	R114	1	R-CHIP	"0OHM,5%,1/10W,DA,TP,2012"
2007-000029	"R15,R28,R144"	3	R-CHIP	"0OHM,5%,1/10W,DA,TP,2012"
2007-000029	"R172,R173"	2	R-CHIP	"0OHM,5%,1/10W,DA,TP,2012"
2007-000029	"R214,R216"	2	R-CHIP	"0OHM,5%,1/10W,DA,TP,2012"
2007-000029	"R218,R219,R200"	3	R-CHIP	"0OHM,5%,1/10W,DA,TP,2012"
2007-000290	"R11,R56,R73,R82,R92"	5	R-CHIP	"100OHM,5%,1/10W,DA,TP,2012"
2007-000290	"R142,R153,R154,R155,R16"	5	R-CHIP	"100OHM,5%,1/10W,DA,TP,2012"
2007-000290	R169	1	R-CHIP	"100OHM,5%,1/10W,DA,TP,2012"
2007-000290	"R170,R171,R177,R178"	4	R-CHIP	"100OHM,5%,1/10W,DA,TP,2012"
2007-000290	"R179,R192,R193,R194"	4	R-CHIP	"100OHM,5%,1/10W,DA,TP,2012"
2007-000290	"R195,R201"	2	R-CHIP	"100OHM,5%,1/10W,DA,TP,2012"
2007-000290	"R229,R230,R231"	3	R-CHIP	"100OHM,5%,1/10W,DA,TP,2012"
2007-000290	"R232,R233,R234"	3	R-CHIP	"100OHM,5%,1/10W,DA,TP,2012"
2007-000290	"R26,R29,R175"	3	R-CHIP	"100OHM,5%,1/10W,DA,TP,2012"
2007-000300	"R1,R2,R3,R4,R5"	5	R-CHIP	"10KOHM,5%,1/10W,DA,TP,2012"
2007-000300	"R107,R108,R109,R110,R118"	5	R-CHIP	"10KOHM,5%,1/10W,DA,TP,2012"
2007-000300	"R120,R122,R123,R124,R127"	5	R-CHIP	"10KOHM,5%,1/10W,DA,TP,2012"
2007-000300	"R129,R143"	2	R-CHIP	"10KOHM,5%,1/10W,DA,TP,2012"
2007-000300	"R14,R17,R27,R30,R41"	5	R-CHIP	"10KOHM,5%,1/10W,DA,TP,2012"
2007-000300	"R147,R149,R163,R164"	4	R-CHIP	"10KOHM,5%,1/10W,DA,TP,2012"
2007-000300	"R165,R174,R180,R181,R182"	5	R-CHIP	"10KOHM,5%,1/10W,DA,TP,2012"
2007-000300	"R183,R184,R190,R220,R221"	5	R-CHIP	"10KOHM,5%,1/10W,DA,TP,2012"
2007-000300	"R222,R223,R224,R225,R226"	5	R-CHIP	"10KOHM,5%,1/10W,DA,TP,2012"
2007-000300	"R227,R235"	2	R-CHIP	"10KOHM,5%,1/10W,DA,TP,2012"
2007-000300	"R42,R44,R54,R57,R65"	5	R-CHIP	"10KOHM,5%,1/10W,DA,TP,2012"
2007-000300	"R6,R7,R8,R9,R13"	5	R-CHIP	"10KOHM,5%,1/10W,DA,TP,2012"
2007-000300	"R66,R67,R68,R69,R70"	5	R-CHIP	"10KOHM,5%,1/10W,DA,TP,2012"
2007-000300	"R71,R72,R76,R77,R78"	5	R-CHIP	"10KOHM,5%,1/10W,DA,TP,2012"
2007-000300	"R79,R80,R83,R86,R87"	5	R-CHIP	"10KOHM,5%,1/10W,DA,TP,2012"
2007-000300	"R88,R89,R90,R91,R95"	5	R-CHIP	"10KOHM,5%,1/10W,DA,TP,2012"
2007-000300	"R96,R97,R99,R105"	4	R-CHIP	"10KOHM,5%,1/10W,DA,TP,2012"
2007-000308	"R140,R188"	2	R-CHIP	"10OHM,5%,1/10W,DA,TP,2012"
2007-000308	"R189,R198,R199,R202,R203"	5	R-CHIP	"10OHM,5%,1/10W,DA,TP,2012"
2007-000308	"R204,R205,R210,R211,R212"	5	R-CHIP	"10OHM,5%,1/10W,DA,TP,2012"
2007-000308	R213	1	R-CHIP	"10OHM,5%,1/10W,DA,TP,2012"
2007-000312	"R59,R133"	2	R-CHIP	"10OHM,5%,1/8W,DA,TP,3216"
2007-000449	R145	1	R-CHIP	"180OHM,5%,1/10W,DA,TP,2012"
2007-000468	"R12,R18,R19,R20,R21"	5	R-CHIP	"1KOHM,5%,1/10W,DA,TP,2012"
2007-000468	"R150,R151,R215"	3	R-CHIP	"1KOHM,5%,1/10W,DA,TP,2012"
2007-000468	"R22,R23,R24,R25,R31"	5	R-CHIP	"1KOHM,5%,1/10W,DA,TP,2012"
2007-000468	"R32,R38,R39,R40"	4	R-CHIP	"1KOHM,5%,1/10W,DA,TP,2012"
2007-000493	R157	1	R-CHIP	"2.2KOHM,5%,1/10W,DA,TP,2012"
2007-000781	"R10,R45,R206,R207,R208"	5	R-CHIP	"33OHM,5%,1/10W,DA,TP,2012"
2007-000781	"R106,R115,R116,R117,R119"	5	R-CHIP	"33OHM,5%,1/10W,DA,TP,2012"
2007-000781	"R121,R128,R148,R152,R159"	5	R-CHIP	"33OHM,5%,1/10W,DA,TP,2012"
2007-000781	"R160,R166,R185,R186,R191"	5	R-CHIP	"33OHM,5%,1/10W,DA,TP,2012"
2007-000781	R209	1	R-CHIP	"33OHM,5%,1/10W,DA,TP,2012"
2007-000781	"R33,R34,R35,R36,R43"	5	R-CHIP	"33OHM,5%,1/10W,DA,TP,2012"
2007-000781	"R50,R51,R52,R53,R58"	5	R-CHIP	"33OHM,5%,1/10W,DA,TP,2012"
2007-000781	"R60,R61,R62,R63,R64"	5	R-CHIP	"33OHM,5%,1/10W,DA,TP,2012"
2007-000781	"R74,R75,R84,R85,R93"	5	R-CHIP	"33OHM,5%,1/10W,DA,TP,2012"

Main CONTROLLER PBA

SEC CODE	LOCATION NO.	Q'ty	DESCRIPTION	
2007-000781	"R94,R100,R101,R103,R104"	5	R-CHIP	"33OHM,5%,1/10W,DA,TP,2012"
2007-000931	R236	1	R-CHIP	"470OHM,5%,1/10W,DA,TP,2012"
2007-000964	R228	1	R-CHIP	"5.1KOHM,5%,1/10W,DA,TP,2012"
2007-000964	"R37,R46,R47,R48,R49"	5	R-CHIP	"5.1KOHM,5%,1/10W,DA,TP,2012"
2007-001133	"R168,R176,R187,R196"	4	R-CHIP	"68OHM,5%,1/10W,DA,TP,2012"
2007-001133	"R81,R158"	2	R-CHIP	"68OHM,5%,1/10W,DA,TP,2012"
2011-001094	"RA1,RA2,RA3,RA4,RA5"	5	R-NETWORK	"39ohm,5%,1/16W,L,CHIP,8P,TP"
2011-001094	"RA11,RA12,RA13,RA14,RA15"	5	R-NETWORK	"39ohm,5%,1/16W,L,CHIP,8P,TP"
2011-001094	RA16	1	R-NETWORK	"39ohm,5%,1/16W,L,CHIP,8P,TP"
2011-001094	"RA6,RA7,RA8,RA9,RA10"	5	R-NETWORK	"39ohm,5%,1/16W,L,CHIP,8P,TP"
2203-000192	"C101,C102,C103,C104,C105"	5	"C-CERAMIC,CHIP"	"100nF,+80-20%,50V,Y5V,TP,2012,"
2203-000192	"C106,C107,C108,C109"	4	"C-CERAMIC,CHIP"	"100nF,+80-20%,50V,Y5V,TP,2012,"
2203-000192	"C118,C121,C122,C123,C124"	5	"C-CERAMIC,CHIP"	"100nF,+80-20%,50V,Y5V,TP,2012,"
2203-000192	"C12,C16,C19,C20,C21"	5	"C-CERAMIC,CHIP"	"100nF,+80-20%,50V,Y5V,TP,2012,"
2203-000192	"C125,C126,C127,C128,C131"	5	"C-CERAMIC,CHIP"	"100nF,+80-20%,50V,Y5V,TP,2012,"
2203-000192	"C133,C138,C139,C140,C141"	5	"C-CERAMIC,CHIP"	"100nF,+80-20%,50V,Y5V,TP,2012,"
2203-000192	"C142,C143,C144,C149,C150"	5	"C-CERAMIC,CHIP"	"100nF,+80-20%,50V,Y5V,TP,2012,"
2203-000192	"C151,C162,C163,C164,C165"	5	"C-CERAMIC,CHIP"	"100nF,+80-20%,50V,Y5V,TP,2012,"
2203-000192	"C166,C167,C168,C169,C172"	5	"C-CERAMIC,CHIP"	"100nF,+80-20%,50V,Y5V,TP,2012,"
2203-000192	"C174,C176,C178,C179,C180"	5	"C-CERAMIC,CHIP"	"100nF,+80-20%,50V,Y5V,TP,2012,"
2203-000192	"C181,C182,C183,C184,C185"	5	"C-CERAMIC,CHIP"	"100nF,+80-20%,50V,Y5V,TP,2012,"
2203-000192	"C186,C187,C189,C190,C191"	5	"C-CERAMIC,CHIP"	"100nF,+80-20%,50V,Y5V,TP,2012,"
2203-000192	"C192,C193,C196,C197,C198"	5	"C-CERAMIC,CHIP"	"100nF,+80-20%,50V,Y5V,TP,2012,"
2203-000192	"C199,C200,C203,C209,C212"	5	"C-CERAMIC,CHIP"	"100nF,+80-20%,50V,Y5V,TP,2012,"
2203-000192	"C215,C227"	2	"C-CERAMIC,CHIP"	"100nF,+80-20%,50V,Y5V,TP,2012,"
2203-000192	"C30,C34,C35,C36"	4	"C-CERAMIC,CHIP"	"100nF,+80-20%,50V,Y5V,TP,2012,"
2203-000192	"C41,C42,C44,C45,C46"	5	"C-CERAMIC,CHIP"	"100nF,+80-20%,50V,Y5V,TP,2012,"
2203-000192	"C47,C48,C49,C51,C61"	5	"C-CERAMIC,CHIP"	"100nF,+80-20%,50V,Y5V,TP,2012,"
2203-000192	"C62,C63,C64,C65,C66"	5	"C-CERAMIC,CHIP"	"100nF,+80-20%,50V,Y5V,TP,2012,"
2203-000192	"C67,C68,C69,C70,C71"	5	"C-CERAMIC,CHIP"	"100nF,+80-20%,50V,Y5V,TP,2012,"
2203-000192	"C73,C74,C76,C77,C81"	5	"C-CERAMIC,CHIP"	"100nF,+80-20%,50V,Y5V,TP,2012,"
2203-000192	"C82,C83,C85,C86,C87"	5	"C-CERAMIC,CHIP"	"100nF,+80-20%,50V,Y5V,TP,2012,"
2203-000192	"C88,C89,C90,C91,C93"	5	"C-CERAMIC,CHIP"	"100nF,+80-20%,50V,Y5V,TP,2012,"
2203-000192	"C94,C96,C97,C99,C100"	5	"C-CERAMIC,CHIP"	"100nF,+80-20%,50V,Y5V,TP,2012,"
2203-000239	"C157,C158,C159,C120"	4	"C-CERAMIC,CHIP"	"0.1nF,5%,50V,NP0,TP,2012"
2203-000239	"C175,C188,C194,C195,C201"	5	"C-CERAMIC,CHIP"	"0.1nF,5%,50V,NP0,TP,2012"
2203-000239	C213	1	"C-CERAMIC,CHIP"	"0.1nF,5%,50V,NP0,TP,2012"
2203-000239	"C38,C39,C52,C53"	4	"C-CERAMIC,CHIP"	"0.1nF,5%,50V,NP0,TP,2012"
2203-000239	"C75,C154"	2	"C-CERAMIC,CHIP"	"0.1nF,5%,50V,NP0,TP,2012"
2203-000274	"C78,C79"	2	"C-CERAMIC,CHIP"	"0.01nF,0.25pF,50V,NP0,TP,2012"
2203-000274	"C80,C84,C92"	3	"C-CERAMIC,CHIP"	"0.01nF,0.25pF,50V,NP0,TP,2012"
2203-000361	C130	1	"C-CERAMIC,CHIP"	"0.15nF,5%,50V,NP0,TP,2012"
2203-000389	C137	1	"C-CERAMIC,CHIP"	"0.015nF,5%,50V,NP0,TP,2012"
2203-000455	"C1,C2,C3,C4,C5"	5	"C-CERAMIC,CHIP"	"1nF,5%,50V,NP0,TP,2012"
2203-000455	"C11,C13,C14,C15,C17"	5	"C-CERAMIC,CHIP"	"1nF,5%,50V,NP0,TP,2012"
2203-000455	"C220,C223,C224"	3	"C-CERAMIC,CHIP"	"1nF,5%,50V,NP0,TP,2012"
2203-000455	"C43,C204,C211"	3	"C-CERAMIC,CHIP"	"1nF,5%,50V,NP0,TP,2012"
2203-000455	"C6,C7,C8,C9,C10"	5	"C-CERAMIC,CHIP"	"1nF,5%,50V,NP0,TP,2012"
2203-000595	"C22,C23,C24,C25,C26"	5	"C-CERAMIC,CHIP"	"0.22nF,5%,50V,NP0,TP,2012"
2203-000595	"C27,C28,C29"	3	"C-CERAMIC,CHIP"	"0.22nF,5%,50V,NP0,TP,2012"
2203-000634	"C111,C112,C136"	3	"C-CERAMIC,CHIP"	"0.022nF,5%,50V,NP0,TP,2012"
2203-000634	"C146,C152"	2	"C-CERAMIC,CHIP"	"0.022nF,5%,50V,NP0,TP,2012"
2203-000634	"C31,C32,C33,C160"	4	"C-CERAMIC,CHIP"	"0.022nF,5%,50V,NP0,TP,2012"
2203-000818	C119	1	"C-CERAMIC,CHIP"	"0.033nF,5%,50V,NP0,TP,2012"
2203-000818	"C134,C145,C153,C161"	4	"C-CERAMIC,CHIP"	"0.033nF,5%,50V,NP0,TP,2012"
2203-000818	"C170,C177,C205,C206,C207"	5	"C-CERAMIC,CHIP"	"0.033nF,5%,50V,NP0,TP,2012"
2203-000818	C208	1	"C-CERAMIC,CHIP"	"0.033nF,5%,50V,NP0,TP,2012"
2203-000938	"C221,C222,C225"	3	"C-CERAMIC,CHIP"	"0.47nF,5%,50V,NP0,TP,2012"
2203-000938	"C54,C55,C56,C57,C58"	5	"C-CERAMIC,CHIP"	"0.47nF,5%,50V,NP0,TP,2012"
2203-000938	"C59,C135,C216,C218,C219"	5	"C-CERAMIC,CHIP"	"0.47nF,5%,50V,NP0,TP,2012"
2203-001158	"C129,C173"	2	"C-CERAMIC,CHIP"	"0.068nF,5%,50V,NP0,TP,2012"
2404-000128	"C60,C132"	2	"C-TA,CHIP"	"10uF,20%,16V,-,TP,6032,-"
2404-000468	"C171,C202,C214,C226"	4	"C-TA,CHIP"	"33uF,20%,16V,GP,TP,7343,-"
2404-000468	"C18,C50,C72,C115"	4	"C-TA,CHIP"	"33uF,20%,16V,GP,TP,7343,-"
2804-000380	OSC2	1	OSCILLATOR-CLOCK	"50MHz,100ppm,10 TTL,-,5V,40mA"
2804-001131	OSC1	1	OSCILLATOR-CLOCK	"62.76397MHz,100ppm,10TTLs MAX,"
2901-000229	"LF10,LF11,LF2,LF3"	4	FILTER-EMI SMD	"50V,300mA,-,22nF,4.5x1.8x3.2mm"

Main CONTROLLER PBA

SEC CODE	LOCATION NO.	Q'ty	DESCRIPTION
2901-000229	"LF4,LF5,LF6,LF7,LF8"	5	FILTER-EMI SMD "50V,300mA,-,22nF,4.5x1.8x3.2mm"
2901-000235	"LF1,LF9"	2	FILTER-EMI SMD "50V,300mA,-,150pF,4.5x1.8x3.2,"
3301-001074	B11	1	CORE-FERRITE BEAD"AB,2.0x1.25x0.9mm,-,-"
3301-001074	"B12,B13,B14,B1,B2"	5	CORE-FERRITE BEAD"AB,2.0x1.25x0.9mm,-,-"
3301-001074	"B15,B16"	2	CORE-FERRITE BEAD"AB,2.0x1.25x0.9mm,-,-"
3301-001074	"B3,B4,B5,B6,B7"	5	CORE-FERRITE BEAD"AB,2.0x1.25x0.9mm,-,-"
3301-001074	"B8,B9,B10"	3	CORE-FERRITE BEAD"AB,2.0x1.25x0.9mm,-,-"
3702-000118	J3	1	CONNECTOR-RIBBON"36P,FEMALE,ANGLE,AU"
3702-001090	CN1	1	CONNECTOR-RIBBON"60P,MALE,STRAIGHT,AUF"
3702-001104	J5	1	CONNECTOR-RIBBON"30P,FEMALE,STRAIGHT,AU"
3709-001027	"CN7,CN8,CN9,CN10"	4	CONNECTOR-CARD EDGE"72P,1.27mm,STRAIGHT,SN"
3711-002001	J1	1	CONNECTOR-HEADER"-,20P,2R,2mm,STRAIGHT,SN"
3711-003981	J2	1	CONNECTOR-HEADER"BOX,28P,2R,2mm,STRAIGHT,SN"
4701-001020	U21	1	FREQ-ATTENUATOR "5-80MHz,15dB,-,0.03W"
JC09-00001A	U18	1	IC MICRO COMPUTER-CPU"ML-6100,IBM25EMPPC603EPG-100,CQFP,240P,32X32MM"
JC11-10507A	U3	1	IC MASK ROM-HIGH "ML-165,KM23C8105DG,SOP,44P,600"
JC11-10510A	U14	1	"IC MASK ROM-PCL6,LOW""ml-165,KM23C8105DG,SOP,44P,600"
JC13-00002A	U10	1	IC-ASIC-SPGP1 "ML-7000,SPGP1,QFP,240P,34.6X4.15BSC"
JC13-10506A	U23	1	"IC ASIC-RET,GRAY" "ML-165,HYPER CHIP,PQFP,100P,14"
JC41-00006A		1	PCB-CONTROLLER "ML-7000/NEC,FR-4,4L,1.6T,180X210MM"
JC61-70938A	CPU+HEATSINK	1	SPRING-CLIP "ML-6000,SUS304CSP,0.6*3.5,-,44"
JC62-30905A	CPU	1	HEAT SINK-CPU "ML-6000,AL6063,-"
JC92-01172A	CN9	1	PBA SUB MEM-PDL "ML-7000/NEC,NEC,USA,PDL,-,-,-"
JC94-01052A		1	PRA AUTO SMD"ML+7000XA,SEC,KOREA,POST SCRIPT SIMM,-,-,-"
0202-000108		0	SOLDER-CREAM "RMA-010 T-322,S63,-,-"
0801-001075	U5	1	IC-CMOS LOGIC "74ACT138,DEMUX,SOP,16P,150MIL,"
1107-001077	"U1,U2"	2	IC-FLASH MEMORY "29F800,512Kx16BIT,SOP,44P,512M"
2007-000029	"R1,R3,R8,R11"	4	R-CHIP "0OHM,5%,1/10W,DA,TP,2012"
2007-000290	R4	1	R-CHIP "100OHM,5%,1/10W,DA,TP,2012"
2007-000300	"R7,R12,R13"	3	R-CHIP "10KOHM,5%,1/10W,DA,TP,2012"
2007-000781	R6	1	R-CHIP "33OHM,5%,1/10W,DA,TP,2012"
2203-000192	"C1,C2,C5"	3	"C-CERAMIC,CHIP" "100nF,+80-20%,50V,Y5V,TP,2012,"
JC41-10514A	PCB-FLASH SIMM	1	PCB-FLASH SIMM "ML-165,FR-4,4L,1.6T,102.87*35"
JF68-30527N	"U2,U13"	2	LABEL(R)-BAR CODE "SF500,PY,20X10,T0.1,WHT"

7-3. MEM-PDL PBA

SEC CODE	LOCATION NO.	Q'ty	DESCRIPTION	
JC92-01172A			**PBA SUB MEM-PDL**	
JC94-01052A		1	PRA AUTO SMD	"ML+7000XA,SEC,KOREA,POST SCRIPT SIMM,-,-,-"
0202-000108		0	SOLDER-CREAM	"RMA-010 T-322,S63,-,-"
0801-001075	U5	1	IC-CMOS LOGIC	"74ACT138,DEMUX,SOP,16P,150MIL,"
1107-001077	"U1,U2"	2	IC-FLASH MEMORY	"29F800,512Kx16BIT,SOP,44P,512M"
2007-000029	"R1,R3,R8,R11"	4	R-CHIP	"0OHM,5%,1/10W,DA,TP,2012"
2007-000290	R4	1	R-CHIP	"100OHM,5%,1/10W,DA,TP,2012"
2007-000300	"R7,R12,R13"	3	R-CHIP	"10KOHM,5%,1/10W,DA,TP,2012"
2007-000781	R6	1	R-CHIP	"33OHM,5%,1/10W,DA,TP,2012"
2203-000192	"C1,C2,C5"	3	"C-CERAMIC,CHIP"	"100nF,+80-20%,50V,Y5V,TP,2012,"
JC41-10514A	PCB-FLASH SIMM	1	PCB-FLASH SIMM	"ML-165,FR-4,4L,1.6T,102.87*35"

7-4. PTL PBA

SEC CODE	LOCATION NO.	Q'ty	DESCRIPTION	
JC92-00979A			**PBA SUB-PTL**	
0601-001244	"LD1~LD10"	10	LED	"ROUND,RED,3mm,690nm"
0601-001244	"LD11~LD18"	8	LED	"ROUND,RED,3mm,690nm"
JC39-40531A	CN1	1	CBF HARNESS-PTL	"ML-165,-,UL1061,170mm,RED/WHT,"
JC94-00981A		1	PRA AUTO-PTL	"ML-165,-,-,217.7X9mm,-,-,-"
2001-000937	"R1,R2"	2	R-CARBON	"68ohm,5%,1/8W,AA,TP,1.8x3.2mm"
JC41-10519A	PCB	1	PCB-PTL	"ML-165,FR-1,1L,T1.6mm,217.7X9m"

7-5. CASSETTE PBA

SEC CODE	LOCATION NO.	Q'ty	DESCRIPTION	
JC92-00981A			**PBA SUB-CASSETTE**	
3711-003205	CN1	1	CONNECTOR-HEADER	"BOX,4P,1R,2.0mm,STRAIGHT,SN"
JC94-00986A		1	PRA AUTO-CASSETTE	"ML-165,-,-,35.51x52.3mm,-,-,-"
3404-000116	"SW1,SW2,SW3"	3	SWITCH-TACT	"12V,50mA,160gf,6X6X3.6mm,SPST"
JC41-10517A	PCB	1	PCB-CASSETTE	"ML-165,FR-4,2L,1.6mm,35.51*52."

7-6. DISP-PANEL PBA

SEC CODE	LOCATION NO.	Q'ty	DESCRIPTION
JC92-00972A			**PBA SUB DISP-PANEL**
0601-000353	LED1	1	LED "ROUND,RED/Y-GRN,5mm,630/569nm"
3711-000595	CN1	1	CONNECTOR-HEADER"BOX,10P,1R,2mm,ANGLE,SN"
3711-000760	CN2	1	CONNECTOR-HEADER"BOX,20P,2R,2mm,ANGLE,SN"
JC94-00969A		1	PRA AUTO-PANEL "ML-165,SEC,USA,PCL6,-,-,-"
0501-000010	Q1	1	TR-SMALL SIGNAL "KSC1008,NPN,800mW,TO-92,TP,120"
2001-000111	R4	1	R-CARBON "150OHM,5%,1/4W,AA,TP,2.4X6.4MM"
2001-000281	"R3,R11"	2	R-CARBON "100OHM,5%,1/8W,AA,TP,1.8X3.2MM"
2001-000290	"R1,R2,R7"	3	R-CARBON "10KOHM,5%,1/8W,AA,TP,1.8X3.2MM"
2001-000323	R6	1	R-CARBON "120OHM,5%,1/4W,AA,TP,2.4X6.4MM"
2001-000832	R5	1	R-CARBON "510OHM,5%,1/8W,AA,TP,1.8X3.2MM"
2202-000002	"C2,C4,C5,C7"	4	"C-CERAMIC,MLC-AXIAL""10nF,0.05,500V,X7R,TP,5.1x6.4x"
2401-001476	C1	1	C-AL "47uF,20%,10V,GP,TP,6.3x5mm,2.5"
3404-000116	"SW1~SW8"	8	SWITCH-TACT "12V,50mA,160gf,6X6X3.6mm,SPST"
JC39-40511A	"JP1,JP2,JP3,JP4,JP5,JP6"	6	CBF HARNESS- "ML-80,JUMPER,AWG22,52mm,SILVER"
JC41-10511A		1	PCB-PANEL "ML-165,FR-1,IL,T1.6mm,77X75mm"

7-7. DISP-LCD PBA

SEC CODE	LOCATION NO.	Q'ty	DESCRIPTION
JC92-00973A			**PBA SUB DISP-LCD**
3711-000595	CN10	1	CONNECTOR-HEADER"BOX,10P,1R,2mm,ANGLE,SN"
6003-000119	LCD MODULE	1	SCREW-TAPTITE "BH,+,B,M3,L8,CBLACK,SWRCH18A"
JC07-20501A	LCD1	1	DISPLAY LCD-MODULE"ML-165,PC0802LYS-AEB-B-R2,BLK/"
JC72-40265A		2	PMO-SPACE LCD "ML-80,ABS,-,HB,-"
JC94-00971A		1	PRA AUTO-LCD "ML-165,SEC,USA,PCL6,-,-,-"
2001-000290	R10	1	R-CARBON "10KOHM,5%,1/8W,AA,TP,1.8X3.2MM"
2202-000002	C6	1	"C-CERAMIC,MLC-AXIAL""10nF,0.05,500V,X7R,TP,5.1x6.4x"
JC41-10512A		1	PCB-PANEL LCD "ML-165,FR1,1L,T1.6mm,59.5X39mm"

7-8. TONER PBA

SEC CODE	LOCATION NO.	Q'ty	DESCRIPTION
JC92-01007A			
0501-000399	Q1	1	TR-SMALL SIGNAL "KSC945-G,NPN,250mW,TO-92,TP,20"
0601-001276	LD1	1	LED-IR "ROUND,5,20,5,-,-"
0603-001025	CN1	1	PHOTO-TR "NPN,30V,4V,50mA,150mW,BK"
2001-000027	R1	1	R-CARBON "100OHM,5%,1/4W,AA,TP,2.4X6.4MM"
2001-000281	R3	1	R-CARBON "100OHM,5%,1/8W,AA,TP,1.8X3.2MM"
2001-000290	"R2,R4,R5"	3	R-CARBON "10KOHM,5%,1/8W,AA,TP,1.8X3.2MM"
2001-000734	R6	1	R-CARBON "4.7KOHM,5%,1/8W,AA,TP,1.8X3.2MM"
2201-000469	C1	1	"C-CERAMIC,DISC" "330pF,10%,500V,Y5P,TP,6x4,5"
JC41-10520A		1	PCB-TONER "ML-165,FR-1,1L,T1.6mm,44*34.5m"
JC70-10999A	"5V,T,G"	3	IPR-ELECTRODE_PCB"ML-6000,C5201P-1/2H,T0.2,-"

7-9. NETWORK CARD PBA(100BASE)

SEC CODE	LOCATION NO.	Q'ty	DESCRIPTION
JC92-01119A			**NETWORK CARD PBA(100BASE)**
0601-000105	LED2	1	"LED;CBI-ANGLE,GRN,5mm,560nm"
0601-000105	LED1	1	"LED;CBI-ANGLE,GRN,5mm,560nm"
2804-001056	Y1	1	"OSCILLATOR-CLOCK;33MHz,100ppm,"
2804-001311	Y2	1	"OSCILLATOR-CLOCK;25MHZ,50PPM,C"
3301-000344	BD2	1	"CORE-FERRITE BEAD;ZZ,3.5x6.5mm"
3702-001102	J1	1	"CONNECTOR-RIBBON;60P,FEMALE,ST"
3711-003205	CN6	1	"CONNECTOR-HEADER;BOX,4P,1R,2.0"
3722-001319	CN5	1	"JACK-MODULAR;8P/8C,-,AU30U,BLK"
JC94-00076A		1	PHANTOM AU JC92-01119A
0801-001072	U20	1	"IC-CMOS LOGIC;74ACT32,OR GATE,"
0903-001118	U26	1	"IC-MICROCONTROLLER;32C5000,32B"
1103-001061	U15	1	"IC-EEPROM;24C32,4Kx8BIT,SOP,8P"
1105-001252	U18	1	"IC-DRAM;416C4104,4MX16BIT,TSOP"
1106-001275	U24	1	"IC-SRAM;68257,32KX8BIT,TSOP,28"
1106-001275	U25	1	"IC-SRAM;68257,32KX8BIT,TSOP,28"
1107-001046	U19	1	"IC-FLASH MEMORY;29F800,512Kx16"
1205-001675	U165	1	"IC-TRANSCEIVER;ICS1892Y,MQFP,6"
2007-000026	R68	1	"R-CHIP;200OHM,5%,1/10W,DA,TP,2"
2007-000026	R71	1	"R-CHIP;200OHM,5%,1/10W,DA,TP,2"
2007-000026	R70	1	"R-CHIP;200OHM,5%,1/10W,DA,TP,2"
2007-000026	R69	1	"R-CHIP;200OHM,5%,1/10W,DA,TP,2"
2007-000029	R98	1	"R-CHIP;0OHM,5%,1/10W,DA,TP,201"
2007-000029	R73	1	"R-CHIP;0OHM,5%,1/10W,DA,TP,201"
2007-000029	R97	1	"R-CHIP;0OHM,5%,1/10W,DA,TP,201"
2007-000029	R30	1	"R-CHIP;0OHM,5%,1/10W,DA,TP,201"
2007-000029	R72	1	"R-CHIP;0OHM,5%,1/10W,DA,TP,201"
2007-000238	R148	1	"R-CHIP;1.5KOHM,1%,1/10W,DA,TP,"
2007-000297	R127	1	"R-CHIP;10KOHM,1%,1/10W,DA,TP,2"
2007-000297	R147	1	"R-CHIP;10KOHM,1%,1/10W,DA,TP,2"
2007-000297	R94	1	"R-CHIP;10KOHM,1%,1/10W,DA,TP,2"
2007-000297	R126	1	"R-CHIP;10KOHM,1%,1/10W,DA,TP,2"
2007-000297	R96	1	"R-CHIP;10KOHM,1%,1/10W,DA,TP,2"
2007-000297	R120	1	"R-CHIP;10KOHM,1%,1/10W,DA,TP,2"
2007-000297	R95	1	"R-CHIP;10KOHM,1%,1/10W,DA,TP,2"
2007-000297	R124	1	"R-CHIP;10KOHM,1%,1/10W,DA,TP,2"
2007-000297	R150	1	"R-CHIP;10KOHM,1%,1/10W,DA,TP,2"
2007-000297	R119	1	"R-CHIP;10KOHM,1%,1/10W,DA,TP,2"
2007-000297	R128	1	"R-CHIP;10KOHM,1%,1/10W,DA,TP,2"
2007-000297	R121	1	"R-CHIP;10KOHM,1%,1/10W,DA,TP,2"
2007-000297	R118	1	"R-CHIP;10KOHM,1%,1/10W,DA,TP,2"
2007-000297	R129	1	"R-CHIP;10KOHM,1%,1/10W,DA,TP,2"
2007-000297	R92	1	"R-CHIP;10KOHM,1%,1/10W,DA,TP,2"
2007-000449	R105	1	"R-CHIP;180OHM,5%,1/10W,DA,TP,2"
2007-000468	R87	1	"R-CHIP;1KOHM,5%,1/10W,DA,TP,20"
2007-000468	R78	1	"R-CHIP;1KOHM,5%,1/10W,DA,TP,20"
2007-000468	R76	1	"R-CHIP;1KOHM,5%,1/10W,DA,TP,20"
2007-000468	R75	1	"R-CHIP;1KOHM,5%,1/10W,DA,TP,20"
2007-000468	R88	1	"R-CHIP;1KOHM,5%,1/10W,DA,TP,20"
2007-000468	R74	1	"R-CHIP;1KOHM,5%,1/10W,DA,TP,20"
2007-000511	R111	1	"R-CHIP;2.4KOHM,5%,1/10W,DA,TP,"
2007-000766	R125	1	"R-CHIP;330OHM,5%,1/10W,DA,TP,2"
2007-000766	R89	1	"R-CHIP;330OHM,5%,1/10W,DA,TP,2"
2007-000766	R146	1	"R-CHIP;330OHM,5%,1/10W,DA,TP,2"

NETWORK CARD PBA(100BASE)

SEC CODE	LOCATION NO.	Q'ty	DESCRIPTION
2007-000766	R91	1	"R-CHIP;330OHM,5%,1/10W,DA,TP,2"
2007-000766	R90	1	"R-CHIP;330OHM,5%,1/10W,DA,TP,2"
2007-000781	R145	1	"R-CHIP;33OHM,5%,1/10W,DA,TP,20"
2007-000781	R123	1	"R-CHIP;33OHM,5%,1/10W,DA,TP,20"
2007-000781	R104	1	"R-CHIP;33OHM,5%,1/10W,DA,TP,20"
2007-000781	R149	1	"R-CHIP;33OHM,5%,1/10W,DA,TP,20"
2007-000953	R109	1	"R-CHIP;49.9OHM,1%,1/10W,DA,TP,"
2007-000953	R108	1	"R-CHIP;49.9OHM,1%,1/10W,DA,TP,"
2007-001067	R110	1	"R-CHIP;6.8KOHM,1%,1/10W,DA,TP,"
2007-001092	R107	1	"R-CHIP;620OHM,5%,1/10W,DA,TP,2"
2007-001092	R106	1	"R-CHIP;620OHM,5%,1/10W,DA,TP,2"
2007-001133	R103	1	"R-CHIP;68OHM,5%,1/10W,DA,TP,20"
2007-001133	R113	1	"R-CHIP;68OHM,5%,1/10W,DA,TP,20"
2007-002826	R112	1	"R-CHIP;110OHM,1%,1/10W,DA,TP,2"
2011-001094	RA1	1	"R-NETWORK;39ohm,5%,1/16W,L,CHI"
2011-001094	RA10	1	"R-NETWORK;39ohm,5%,1/16W,L,CHI"
2203-000192	C102	1	"C-CERAMIC,CHIP;100nF,+80-20%,5"
2203-000192	C101	1	"C-CERAMIC,CHIP;100nF,+80-20%,5"
2203-000192	C105	1	"C-CERAMIC,CHIP;100nF,+80-20%,5"
2203-000192	C106	1	"C-CERAMIC,CHIP;100nF,+80-20%,5"
2203-000192	C147	1	"C-CERAMIC,CHIP;100nF,+80-20%,5"
2203-000192	C103	1	"C-CERAMIC,CHIP;100nF,+80-20%,5"
2203-000192	C100	1	"C-CERAMIC,CHIP;100nF,+80-20%,5"
2203-000192	C110	1	"C-CERAMIC,CHIP;100nF,+80-20%,5"
2203-000192	C170	1	"C-CERAMIC,CHIP;100nF,+80-20%,5"
2203-000192	C107	1	"C-CERAMIC,CHIP;100nF,+80-20%,5"
2203-000192	C104	1	"C-CERAMIC,CHIP;100nF,+80-20%,5"
2203-000192	C161	1	"C-CERAMIC,CHIP;100nF,+80-20%,5"
2203-000192	C94	1	"C-CERAMIC,CHIP;100nF,+80-20%,5"
2203-000192	C97	1	"C-CERAMIC,CHIP;100nF,+80-20%,5"
2203-000192	C96	1	"C-CERAMIC,CHIP;100nF,+80-20%,5"
2203-000192	C95	1	"C-CERAMIC,CHIP;100nF,+80-20%,5"
2203-000192	C126	1	"C-CERAMIC,CHIP;100nF,+80-20%,5"
2203-000192	C88	1	"C-CERAMIC,CHIP;100nF,+80-20%,5"
2203-000192	C162	1	"C-CERAMIC,CHIP;100nF,+80-20%,5"
2203-000192	C163	1	"C-CERAMIC,CHIP;100nF,+80-20%,5"
2203-000192	C159	1	"C-CERAMIC,CHIP;100nF,+80-20%,5"
2203-000192	C160	1	"C-CERAMIC,CHIP;100nF,+80-20%,5"
2203-000192	C127	1	"C-CERAMIC,CHIP;100nF,+80-20%,5"
2203-000192	C109	1	"C-CERAMIC,CHIP;100nF,+80-20%,5"
2203-000192	C145	1	"C-CERAMIC,CHIP;100nF,+80-20%,5"
2203-000192	C153	1	"C-CERAMIC,CHIP;100nF,+80-20%,5"
2203-000192	C152	1	"C-CERAMIC,CHIP;100nF,+80-20%,5"
2203-000192	C151	1	"C-CERAMIC,CHIP;100nF,+80-20%,5"
2203-000192	C154	1	"C-CERAMIC,CHIP;100nF,+80-20%,5"
2203-000192	C158	1	"C-CERAMIC,CHIP;100nF,+80-20%,5"
2203-000192	C141	1	"C-CERAMIC,CHIP;100nF,+80-20%,5"
2203-000192	C144	1	"C-CERAMIC,CHIP;100nF,+80-20%,5"
2203-000192	C135	1	"C-CERAMIC,CHIP;100nF,+80-20%,5"
2203-000192	C134	1	"C-CERAMIC,CHIP;100nF,+80-20%,5"
2203-000192	C133	1	"C-CERAMIC,CHIP;100nF,+80-20%,5"
2203-000192	C148	1	"C-CERAMIC,CHIP;100nF,+80-20%,5"
2203-000192	C149	1	"C-CERAMIC,CHIP;100nF,+80-20%,5"

NETWORK CARD PBA(100BASE)

SEC CODE	LOCATION NO.	Q'ty	DESCRIPTION
2203-000192	C150	1	"C-CERAMIC,CHIP;100nF,+80-20%,5"
2203-000192	C131	1	"C-CERAMIC,CHIP;100nF,+80-20%,5"
2203-000192	C130	1	"C-CERAMIC,CHIP;100nF,+80-20%,5"
2203-000192	C129	1	"C-CERAMIC,CHIP;100nF,+80-20%,5"
2203-000192	C128	1	"C-CERAMIC,CHIP;100nF,+80-20%,5"
2203-000192	C143	1	"C-CERAMIC,CHIP;100nF,+80-20%,5"
2203-000192	C146	1	"C-CERAMIC,CHIP;100nF,+80-20%,5"
2203-000192	C108	1	"C-CERAMIC,CHIP;100nF,+80-20%,5"
2203-000192	C140	1	"C-CERAMIC,CHIP;100nF,+80-20%,5"
2203-000192	C139	1	"C-CERAMIC,CHIP;100nF,+80-20%,5"
2203-000192	C138	1	"C-CERAMIC,CHIP;100nF,+80-20%,5"
2203-000192	C137	1	"C-CERAMIC,CHIP;100nF,+80-20%,5"
2203-000192	C142	1	"C-CERAMIC,CHIP;100nF,+80-20%,5"
2203-000192	C132	1	"C-CERAMIC,CHIP;100nF,+80-20%,5"
2203-000192	C136	1	"C-CERAMIC,CHIP;100nF,+80-20%,5"
2203-000316	C185	1	"C-CERAMIC,CHIP;0.12nF,5%,50V,N"
2203-000476	C169	1	"C-CERAMIC,CHIP;1000nF,+80-20%,"
2203-000476	C90	1	"C-CERAMIC,CHIP;1000nF,+80-20%,"
2203-001002	C184	1	"C-CERAMIC,CHIP;0.047nF,5%,50V,"
2203-001002	C182	1	"C-CERAMIC,CHIP;0.047nF,5%,50V,"
2203-001002	C183	1	"C-CERAMIC,CHIP;0.047nF,5%,50V,"
2404-000128	C186	1	"C-TA,CHIP;10uF,20%,16V,-,TP,60"
2404-000128	C92	1	"C-TA,CHIP;10uF,20%,16V,-,TP,60"
2404-000128	C91	1	"C-TA,CHIP;10uF,20%,16V,-,TP,60"
2703-000125	L1	1	"INDUCTOR-SMD;10uH,10%,1.25x2x1"
2703-000125	L2	1	"INDUCTOR-SMD;10uH,10%,1.25x2x1"
3301-001312	R144	1	"CORE-FERRITE BEAD;AB,220OHM,2X"
3301-001312	R138	1	"CORE-FERRITE BEAD;AB,220OHM,2X"
3301-001333	R80	1	"CORE-FERRITE BEAD;AB,120OHM,2X"
3301-001333	R79	1	"CORE-FERRITE BEAD;AB,120OHM,2X"
JC13-00004A	U22	1	"IC-ASIC-NPC;ML-7000N3,NETBRIDG"
JC41-00011A	PCB	1	PCB

7-10. IRDA PBA

SEC CODE	LOCATION NO.	Q'ty	DESCRIPTION
JC92-01116A			**IRDA PBA**
2804-000003	OSC1	1	"OSCILLATOR-CLOCK;7.3728MHz,100"
3701-000232	CN2	1	"CONNECTOR-DSUB;9P,2R,FEMALE,AN"
3702-001103	CN1	1	"CONNECTOR-RIBBON;30P,MALE,STRA"
3722-001241	CN3	1	"JACK-DIN;9P,-,AG,-,-"
JC94-00085A		1	PHANTOM AU JC92-01116A
0407-000101	"D1,D2,D3,D4,D5,D6"	6	"DIODE-ARRAY;DA204K,20V,100mA,C"
0803-000274	"U3,U5"	2	"IC-TTL;74F32,OR GATE,SOP,14P,1"
0803-000468	U2	1	"IC-TTL;74LS273,D FLIP-FLOP,SOP"
0803-001040	U1	1	"IC-TTL;74LS14,SCHIMITT INVERTE"
0904-001197	U7	1	"IC-SCC;85230,8BIT,PLCC,44P,17."
1006-000133	U6	1	"IC-DRIVER/RECEIVER;232,SOP,16P"
1006-000243	U4	1	"IC-LINE TRANSCEIVER;74ACT245,S"
2007-000290	"R2,R6,R7"	3	"R-CHIP;100OHM,5%,1/10W,DA,TP,2"
2007-000300	"R18,R24"	2	"R-CHIP;10KOHM,5%,1/10W,DA,TP,2"
2007-000300	"R1,R3,R4,R8,R15"	5	"R-CHIP;10KOHM,5%,1/10W,DA,TP,2"
2007-000468	R23	1	"R-CHIP;1KOHM,5%,1/10W,DA,TP,20"
2007-000658	"R13,R19,R20"	3	"R-CHIP;27OHM,5%,1/10W,DA,TP,20"
2007-000781	"R5,R14,R17"	3	"R-CHIP;33OHM,5%,1/10W,DA,TP,20"
2007-000931	"R9,R10,R11,R12,R16"	5	"R-CHIP;470OHM,5%,1/10W,DA,TP,2"
2007-001133	"R21,R22"	2	"R-CHIP;68OHM,5%,1/10W,DA,TP,20"
2203-000192	"C3,C4,C5,C6,C8"	5	"C-CERAMIC,CHIP;100nF,+80-20%,5"
2203-000192	"C11,C15,C18,C24"	4	"C-CERAMIC,CHIP;100nF,+80-20%,5"
2203-000239	"C2,C12,C17"	3	"C-CERAMIC,CHIP;0.1nF,5%,50V,NP"
2203-000455	"C7,C9,C10"	3	"C-CERAMIC,CHIP;1nF,5%,50V,NP0,"
2203-000483	"C19,C20,C25,C26"	4	"C-CERAMIC,CHIP;1000nF,+80-20%,"
2203-000784	"C16,C21,C22,C27"	4	"C-CERAMIC,CHIP;0.33nF,5%,50V,N"
2203-000938	"C13,C14"	2	"C-CERAMIC,CHIP;0.47nF,5%,50V,N"
2404-000308	"C1,C23"	2	"C-TA,CHIP;33uF,20%,10V,-,TP,73"
2901-000229	"F1,F3"	2	"FILTER-EMI SMD;50V,300mA,-,22n"
2901-000235	F2	1	"FILTER-EMI SMD;50V,300mA,-,150"
3301-001074	"B7,B8,B9,B10"	4	"CORE-FERRITE BEAD;AB,2.0x1.25x"
3301-001074	"B1,B2,B4,B5,B6,"	5	"CORE-FERRITE BEAD;AB,2.0x1.25x"
JC41-00010A		1	"PCB-IRDA&SERIAL;ML-7000/NEC,FR"

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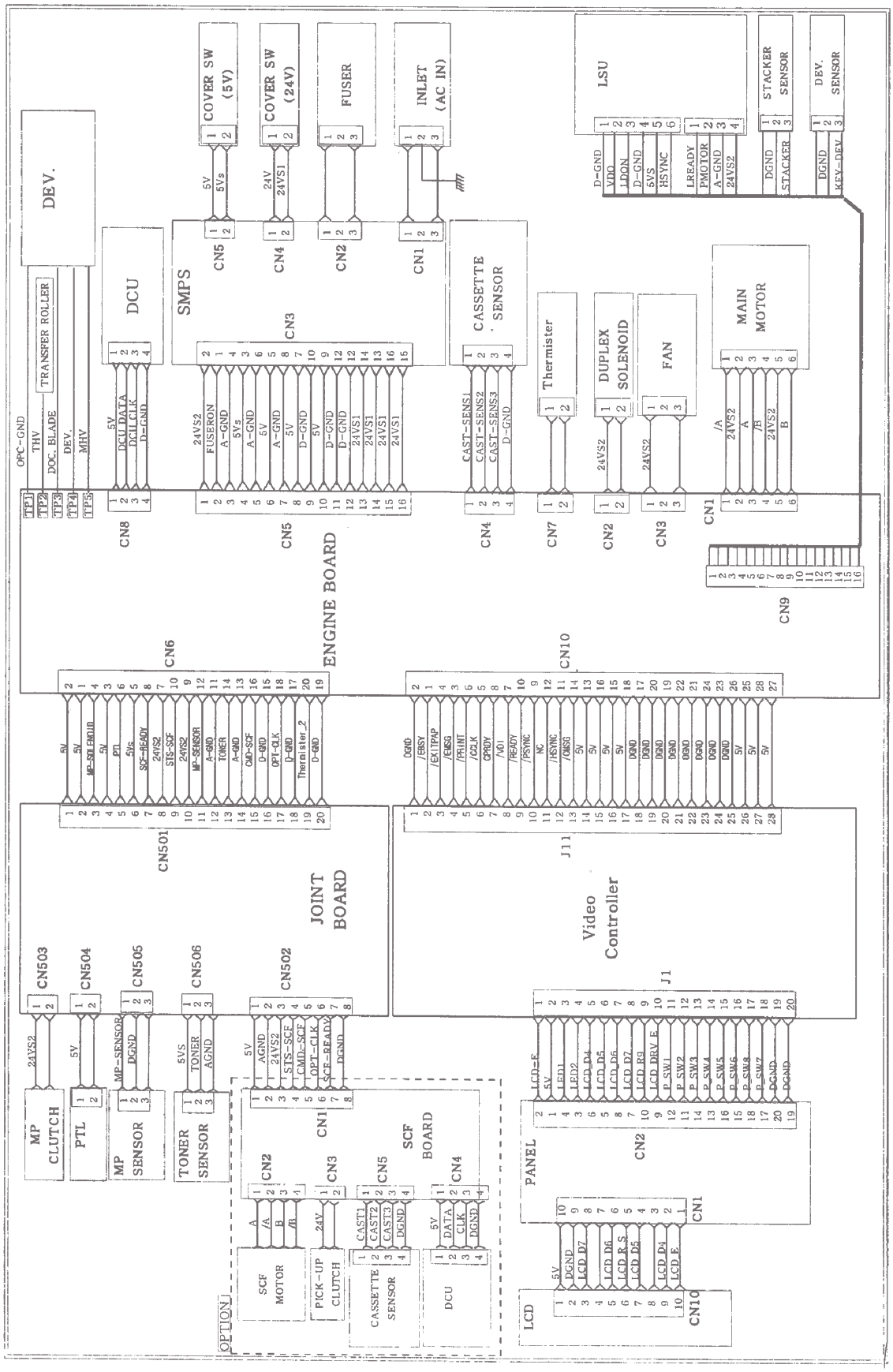
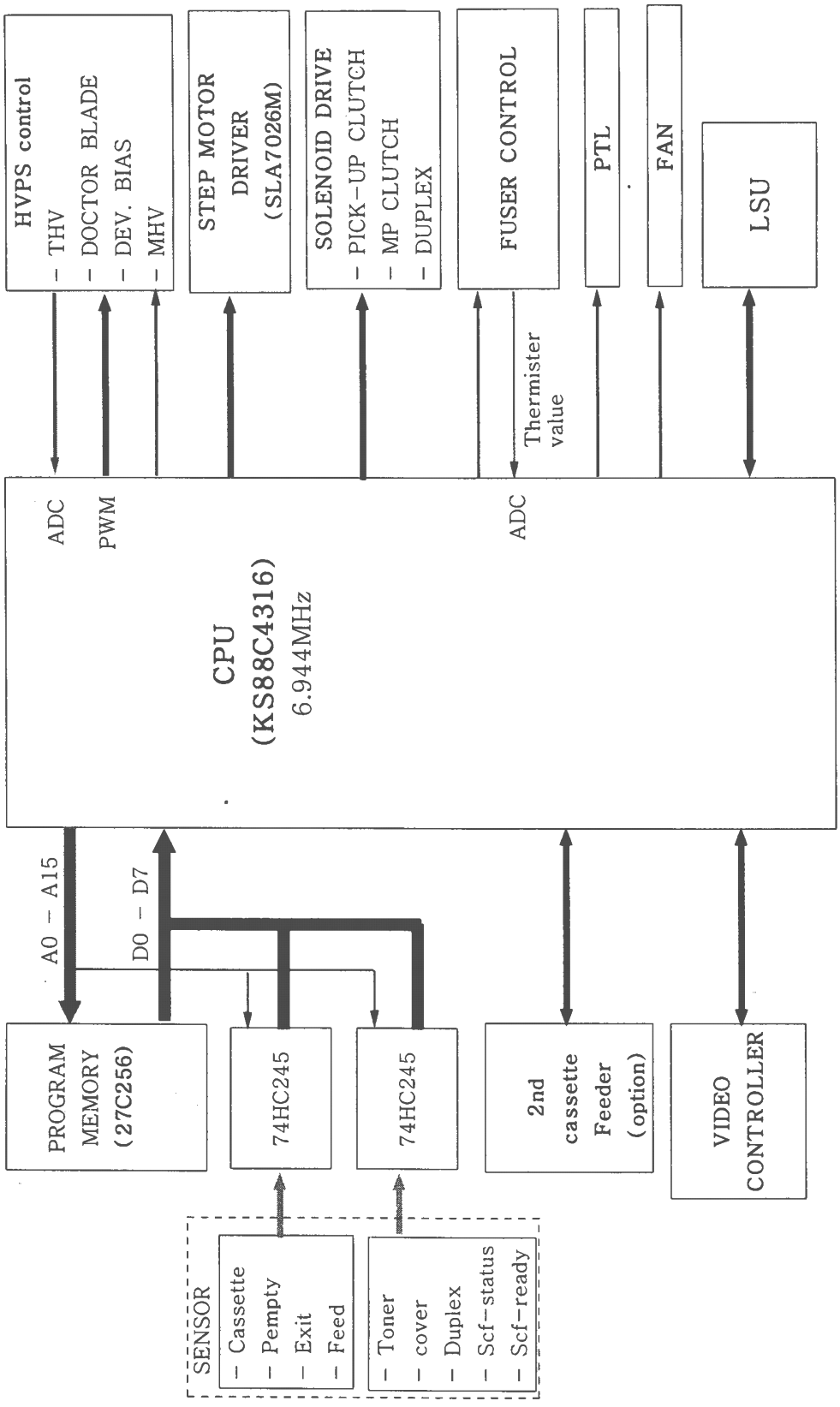
8. Bloack Diagrams

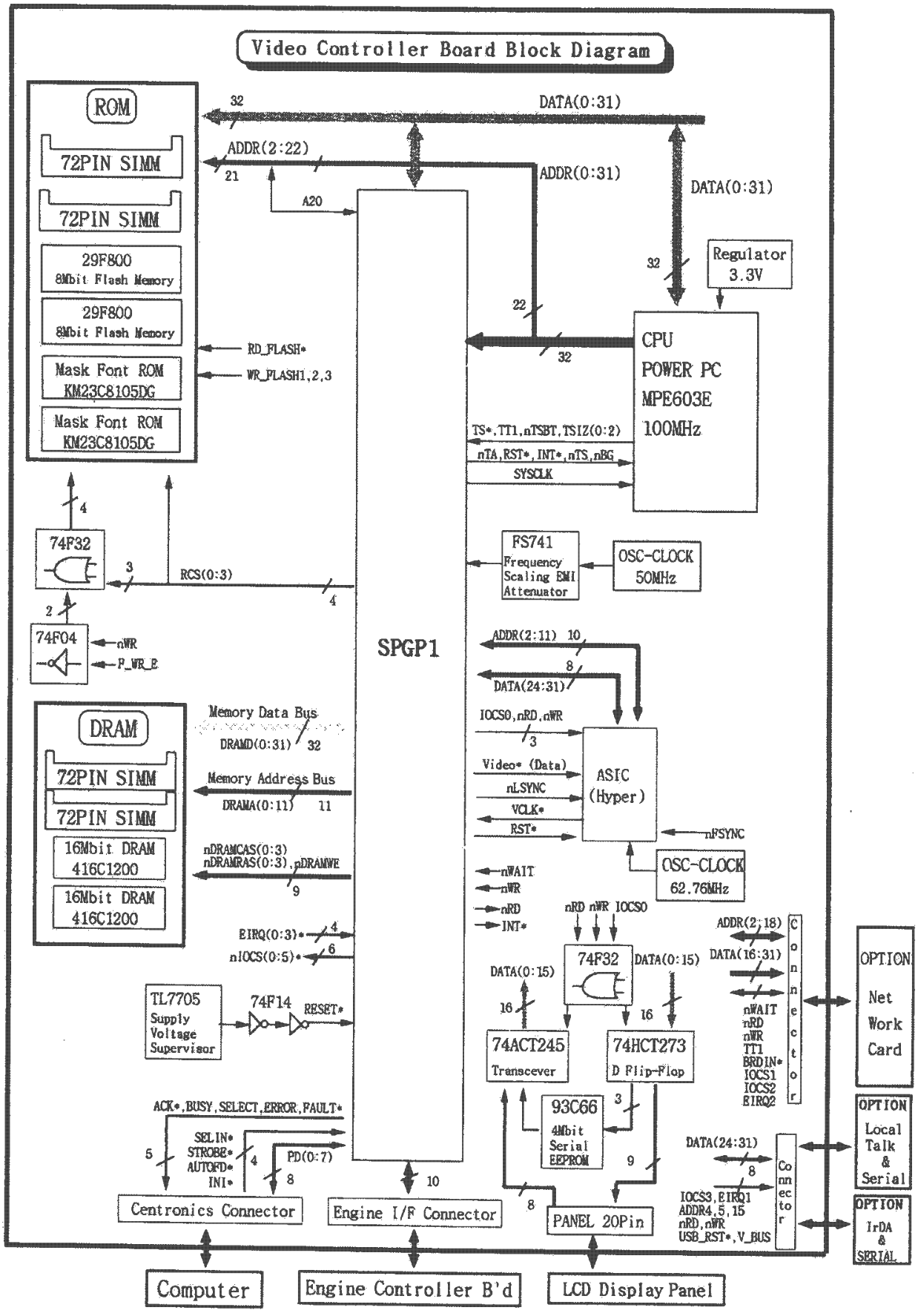
8-1 WIRING DIAGRAM



8-2 Engine Controller Block Diagram



8-3 Video Controller Block Diagram



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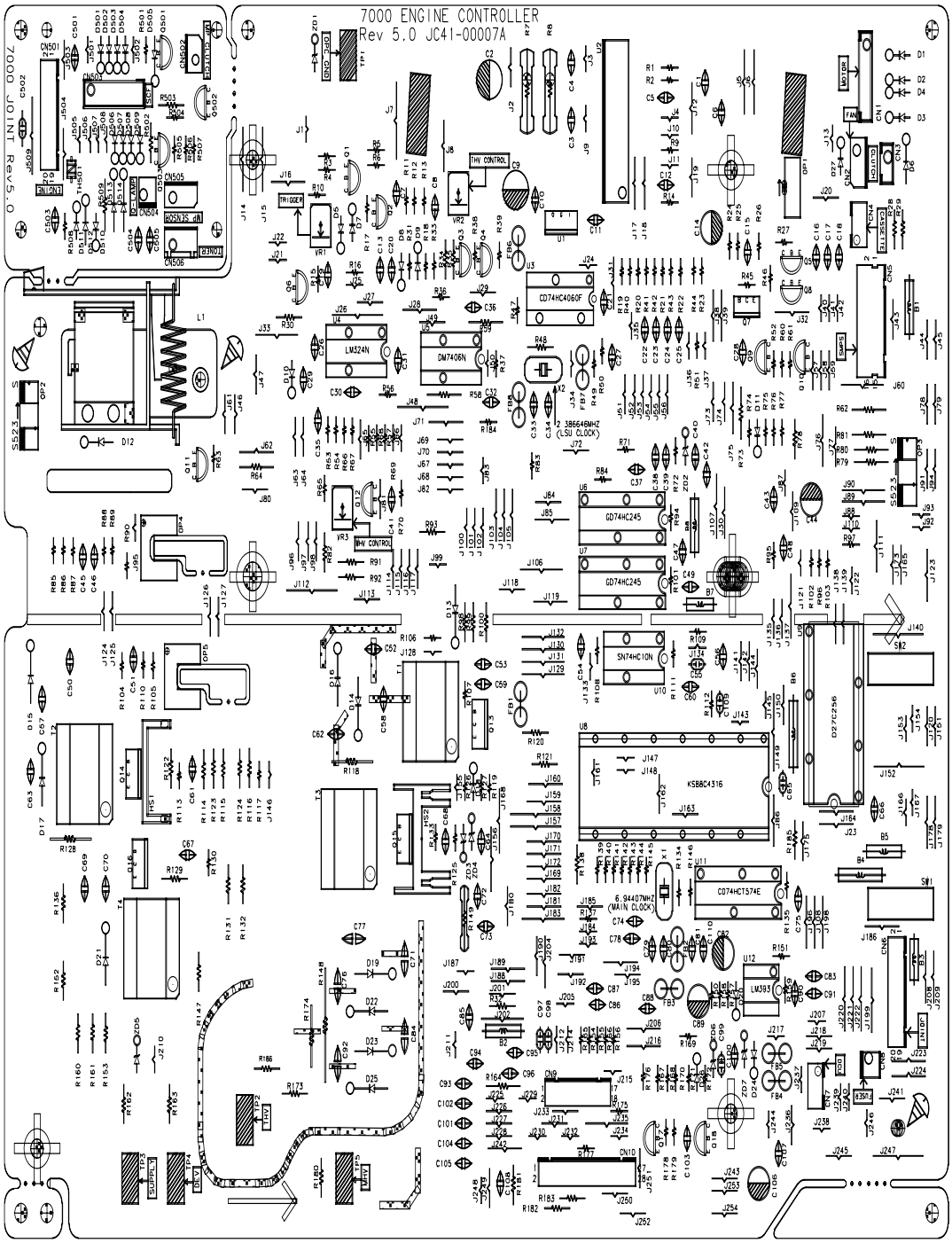
9. PCB Diagrams

9-1. Engine Control & Joint Board

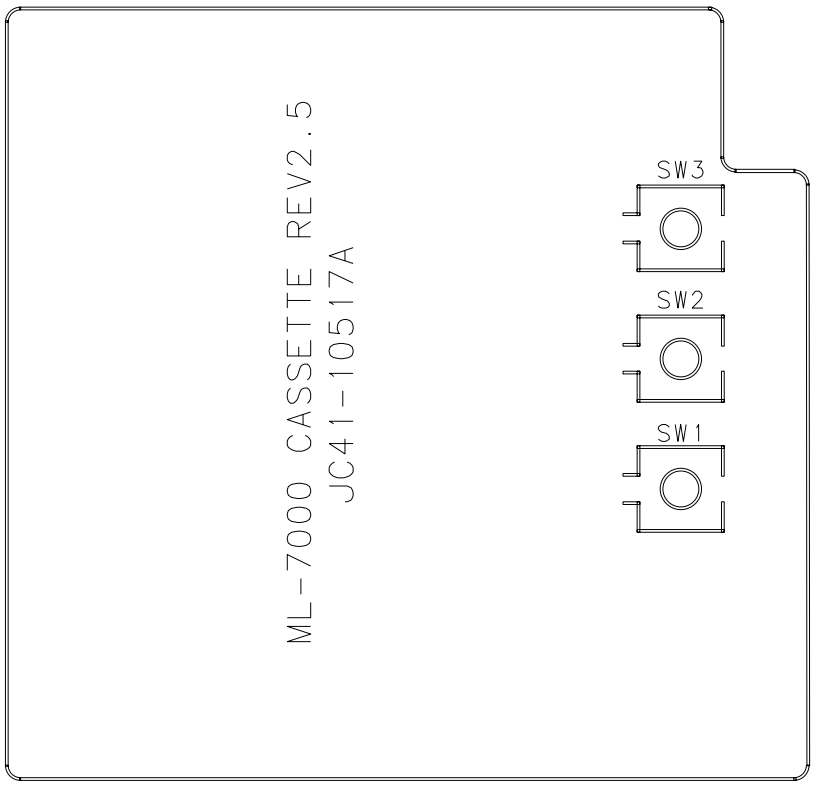
Engine Control Service Part's Code : JC92-01100A

Joint Board Service Part's Code : JC92-00963A

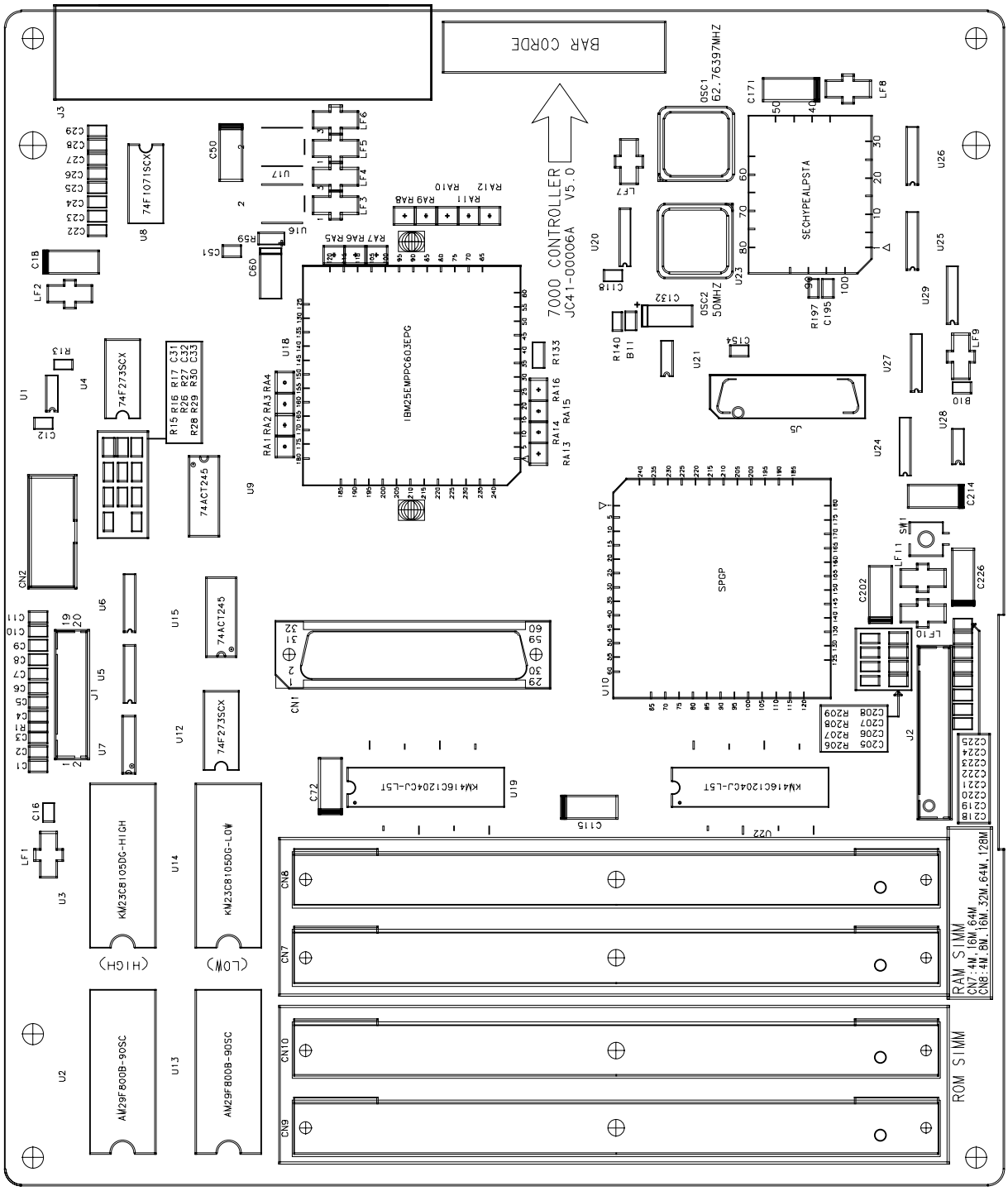


9-2. Cassette Sensor Board

Service Part's Code: JC96-01143A (PBA Code: JC92-00981A)



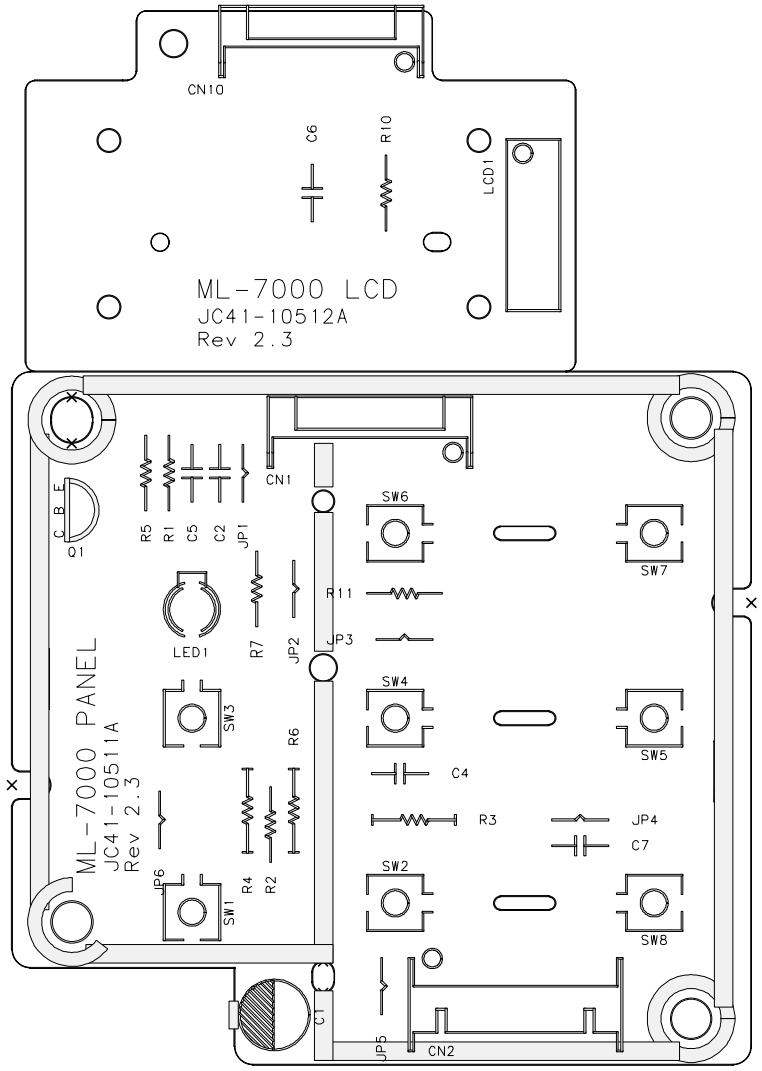
9-3. Video Controller Board: Service Part's Code: JC92-01101A



9-4. Panel & LCD Board

Panel Service Part's Code: JC92-00972A

LCD Service Part's Code: JC92-00973A

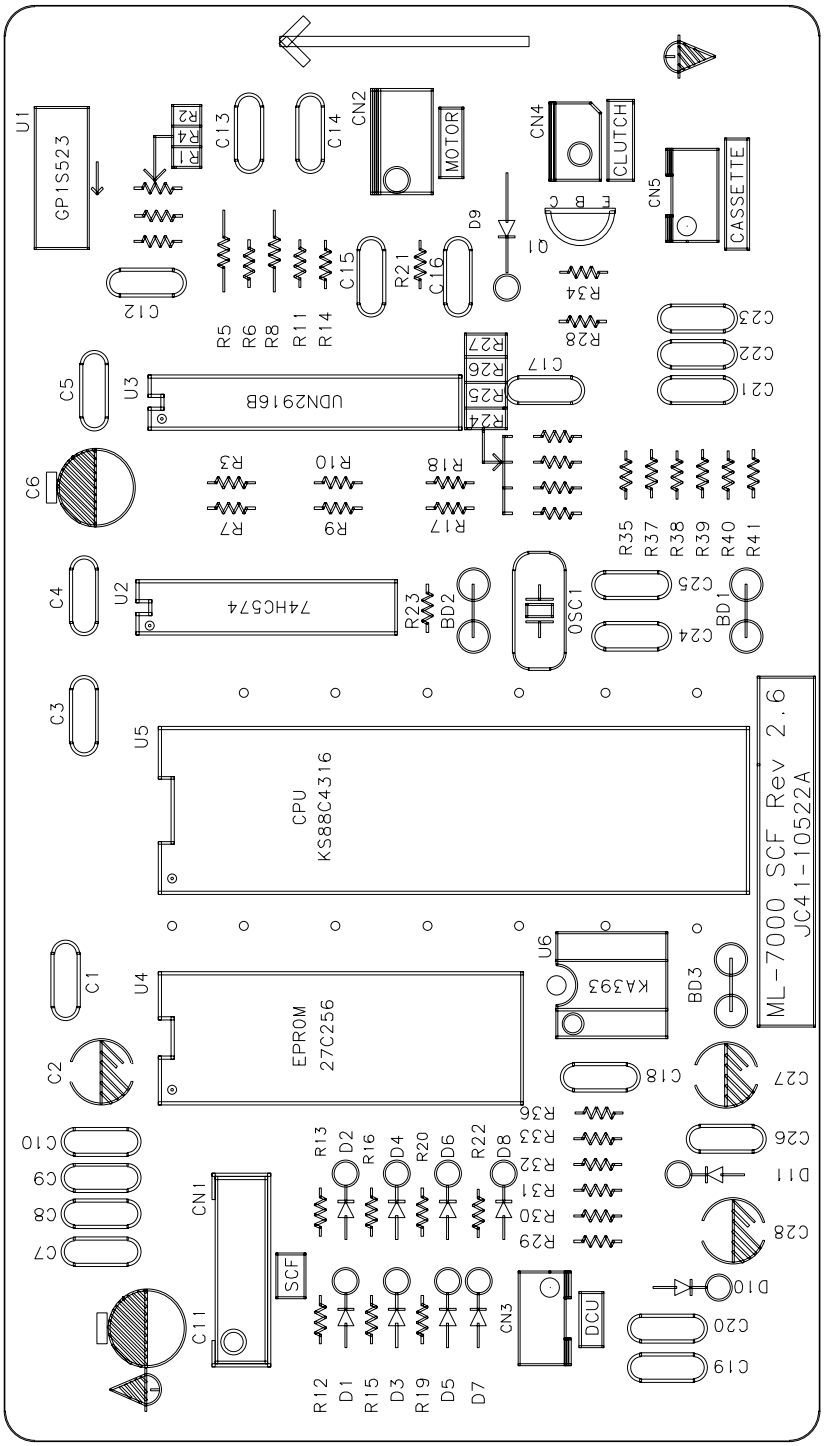


9-5. PTL (Pre Transfer Lamp) Board

Service Part's Code: JC92-00979A

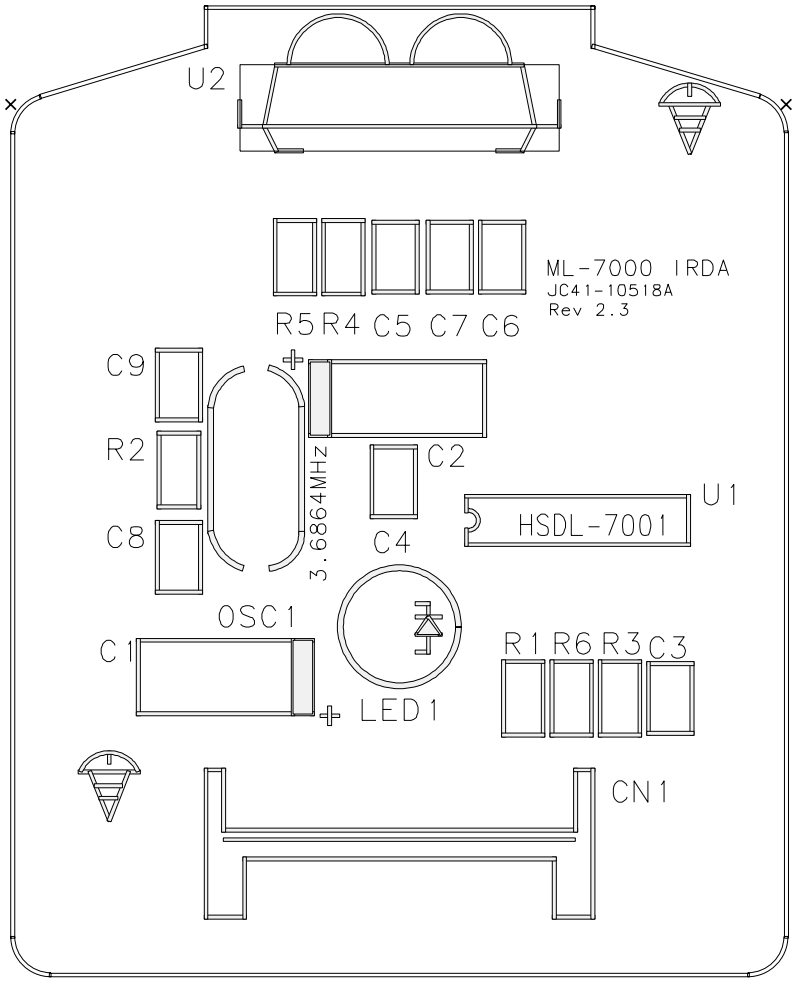
9-6. SCF(Second Cassette Feeder) Board

Service Part's Code: JC92-01062A



9-7. Infrared Adapor Board

Service Part's Code: JC92-00974A



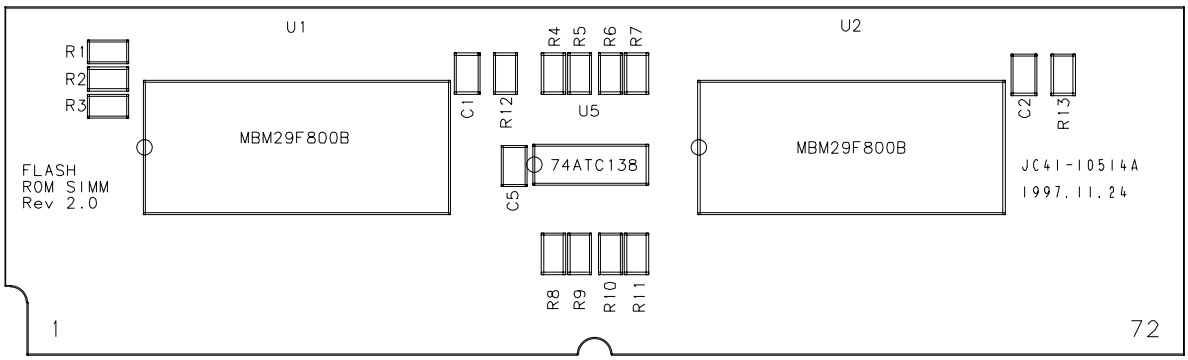
9-8. Flash SIMM Board

2M Byte Service Part's Code: JC92-00976A

4M Byte Service Part's Code: JC92-00977A

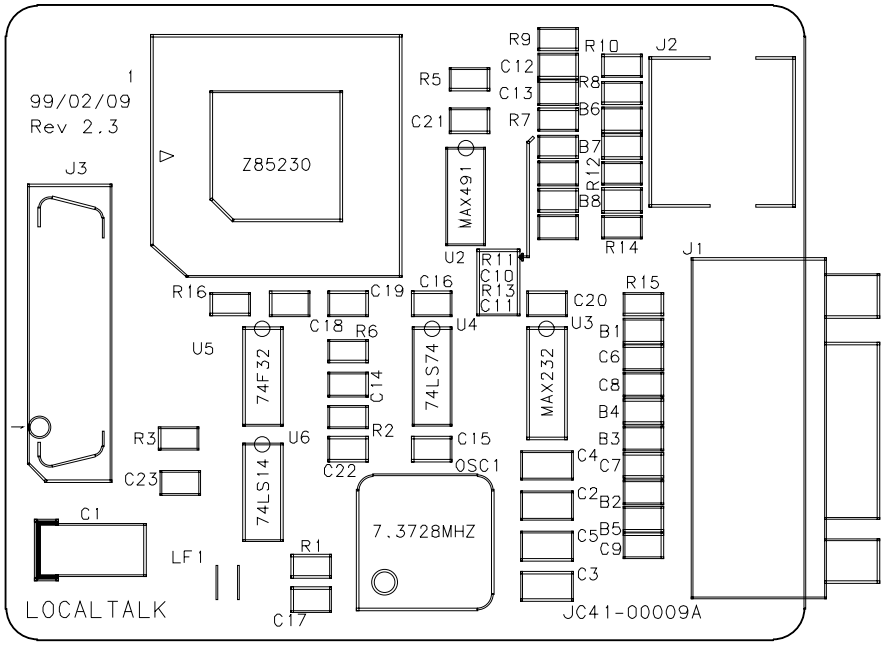
9-9. Postscript Board

Service Part's Code: JC92-01012A



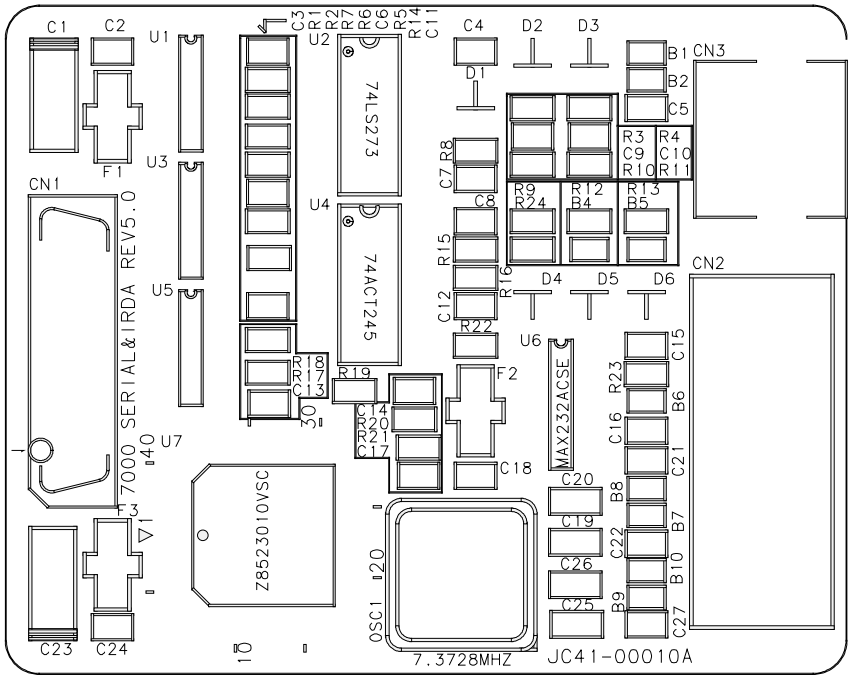
9-10. Local Talk

Service Part's Code: JC92-00971A



9-11. Serial/IRDA Board

Service Part's Code: JC92-01116A



10. PortThru (Network Printer Card) Circuit Description

10-1. Introduction

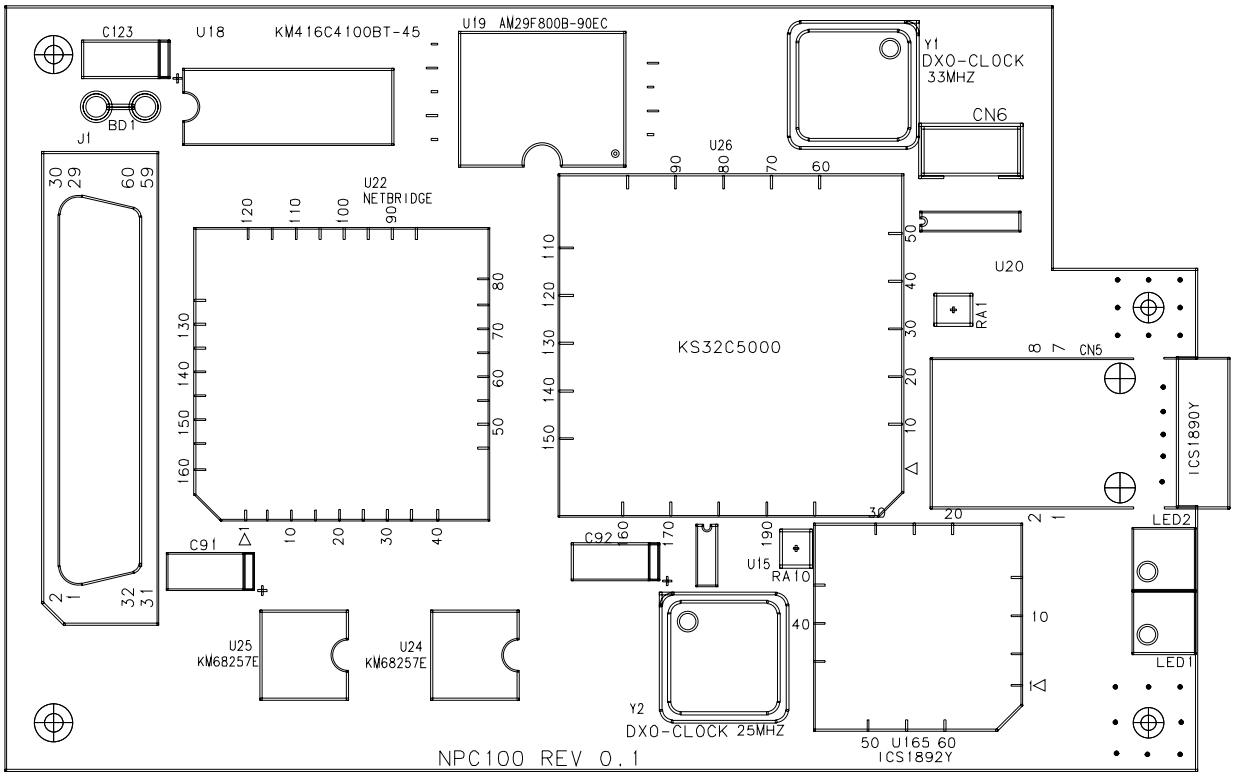
The purpose of the Network Printer Card(PortThru) is to enable the Samsung Printer to function as a network printer. The PortThru is a plug-in card that plugs into the Samsung Printer. The PortThru provides a Ethernet Local Area Network interface through which the printer can be connected to the network.

ITEM		Description
Support system	Novell Netware	Version 3.x, 4.x, 5.0
	MS Windows	Windows 95/98, Windows NT(3.x, 4..x)
	UNIX	AT & T System V(Rel 3.2, Rel 4.2), BSD 4.3 HP-UX(Rel 9.x, Rel 10.x) SCO 5.x, SUN OS 5.5, SOLARIS 2.5
	Macintosh	APPLE
Support protocols	Netware	IPX/SPX, Pserver, Rprint mode, NDS/Bindery
	Windows	IPX/SPX, TCP/IP, DLC/LLC
	UNIX	TCP/IP
	APPLE	EtherTalk Phase 2
	Network Management	SNMP MIB-II, Private MIB
Hardware	CPU	32bit RISC controller
	Flash memory	1M byte
	RAM	64 Kbyte SRAM / 8M byte DRAM
Interface with Printer	Shared memory	64K byte SRAM
Logical connection		IEEE 802.2 802.3
Attachment		10/100Base-Tx
CPU		Samsung NetARM, 33MHz
PHY Chip		ICS1892, 25MHz
Memory	Flash ROM	1M Byte
	DRAM	8M Byte
	SRAM	64K Byte
	EEPROM	32K Bit
Printer Interface		NetBridge, 33MHz
		60 Pin Connector
Dimension(HxWxD)		15 x 80 x 124mm
Power Consumption		Max. 0.6A/ +5Vdc

10-2. Board Description

10-2-1 Configuration of Network Board

Service Part : JC92-01119A

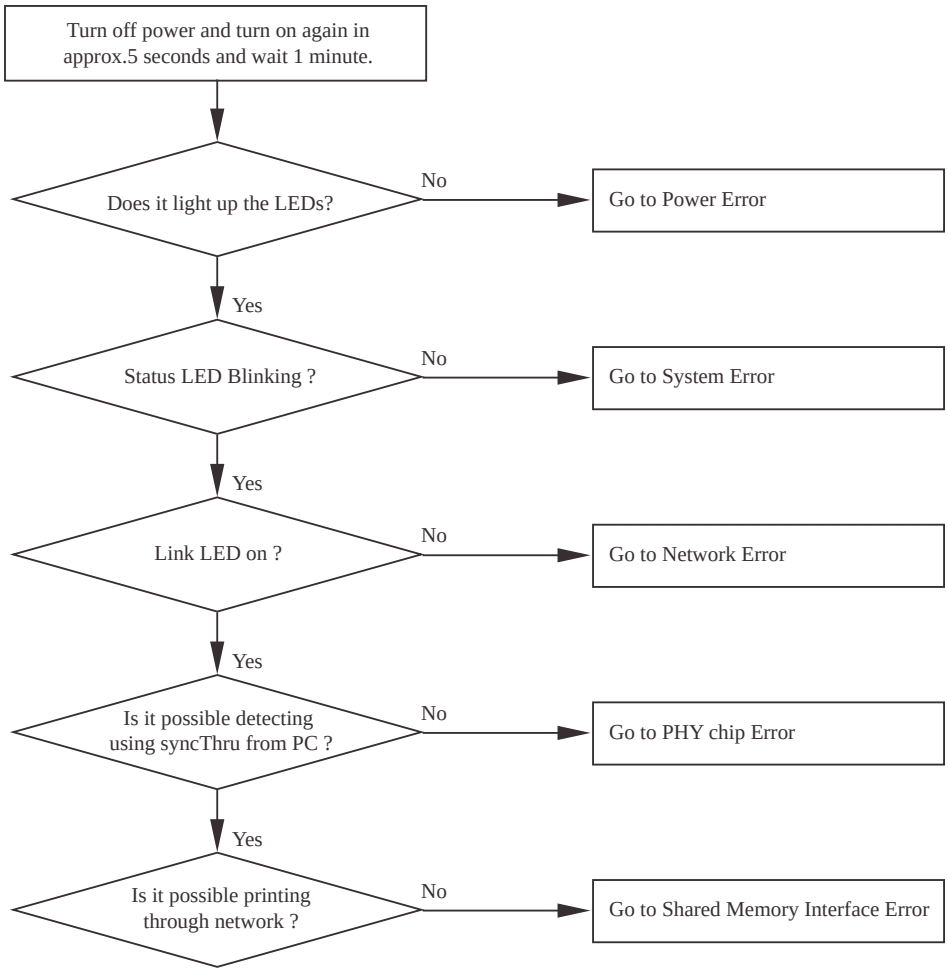


10-2-2 Network Board Connector Pin Assignment

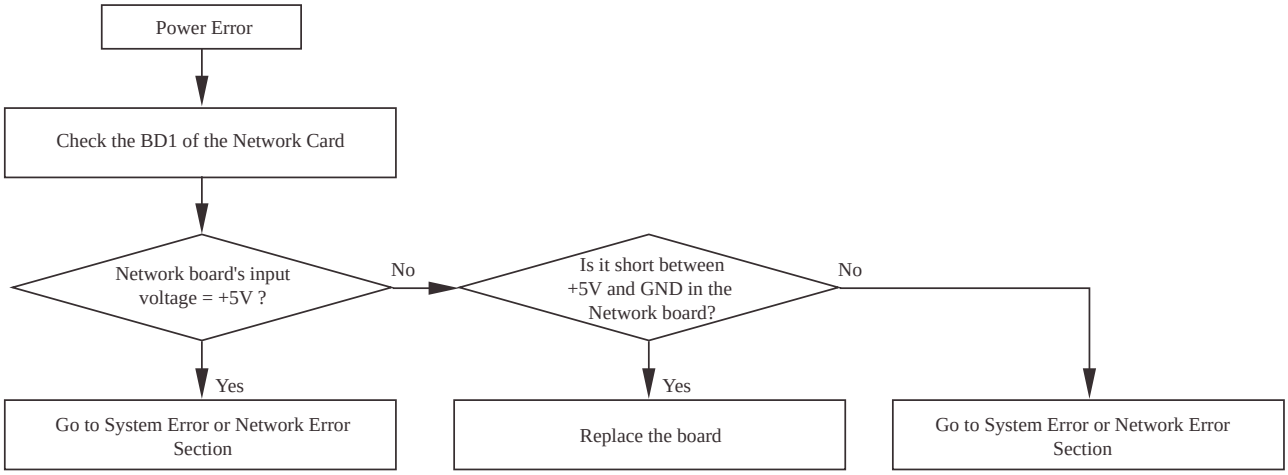
Connector	Description	Pin No.	Idle	Active	In/Out
Printer Interface J1	Addr 0 ~ Addr 15	21, 19, 18, 17, 37, 44, 42, 40, 38, 36, 34, 32 30, 28, 26, 24	Pulse	Pulse	I
	Data 0 ~ 15	35, 33, 31, 29, 27, 25 23, 22, 14, 13, 11, 10 9, 7, 6, 5	Pulse	Pulse	I/O
	nPrnWait	41	+5V	DGND	O
	PRES_L	57	DGND	DGND	-
	nPrnlrq	15	+5V	DGND	O
	nPrnCS	4	+5V	DGND	I
	nPrnRE	50	+5V	DGND	I
	nPrnWE	51	+5V	DGND	I
	nResetIn	39	+5V	DGND	I
	+5V	3, 58, 59, 60	+5V	+5V	-
	DGND	8, 12, 16, 48, 52, 56	DGND	DGND	-
Serial Connector CN6	RxD	1	+5V	Pulse	I
	TxD	2	+5V	Pulse	O
	+5V	3	+5V	+5V	-
	DGND	4	DGND	DGND	-

10-3 Troubleshooting of Network Card

10-3-1 Troubleshooting Flow Chart

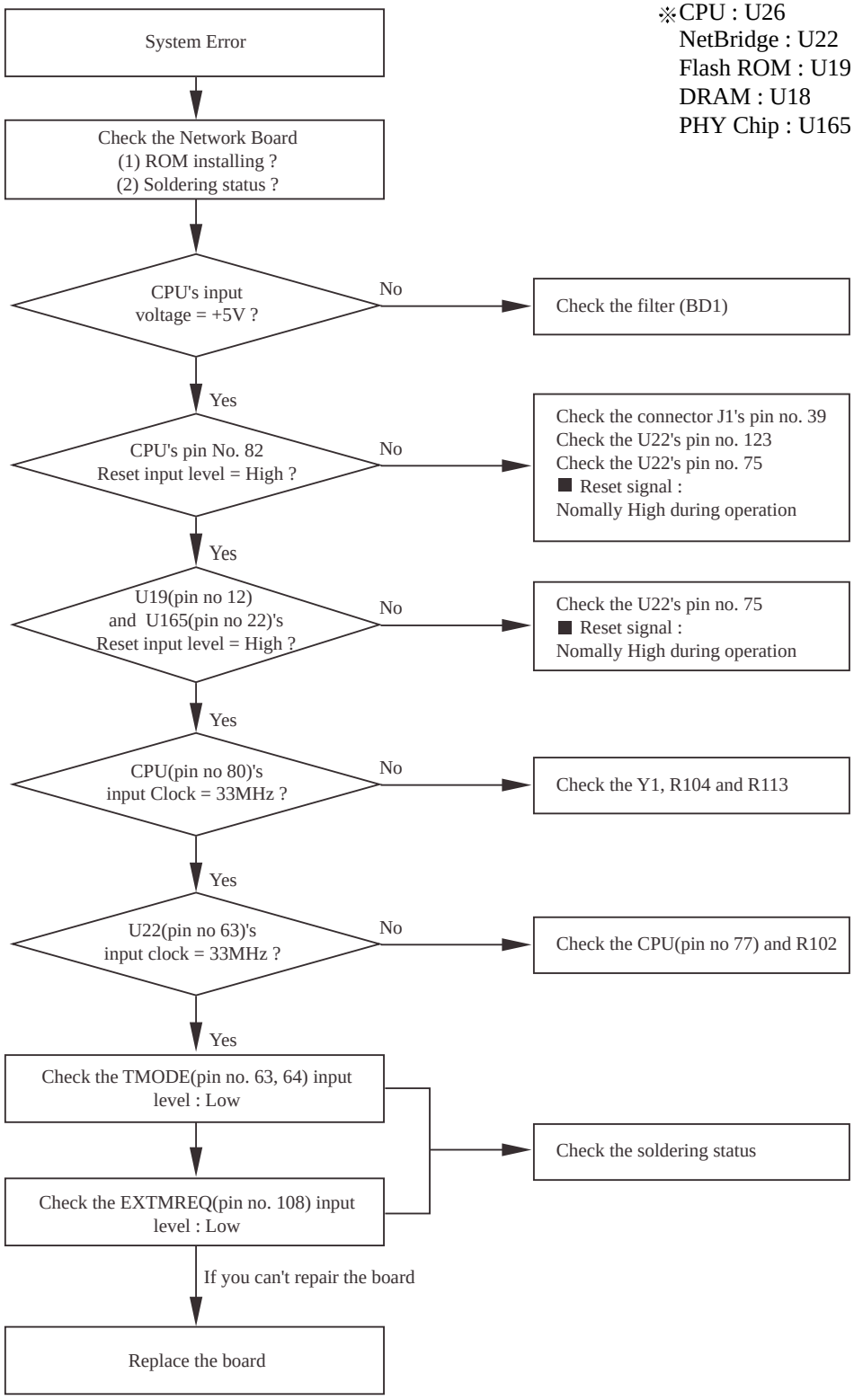


Power Error

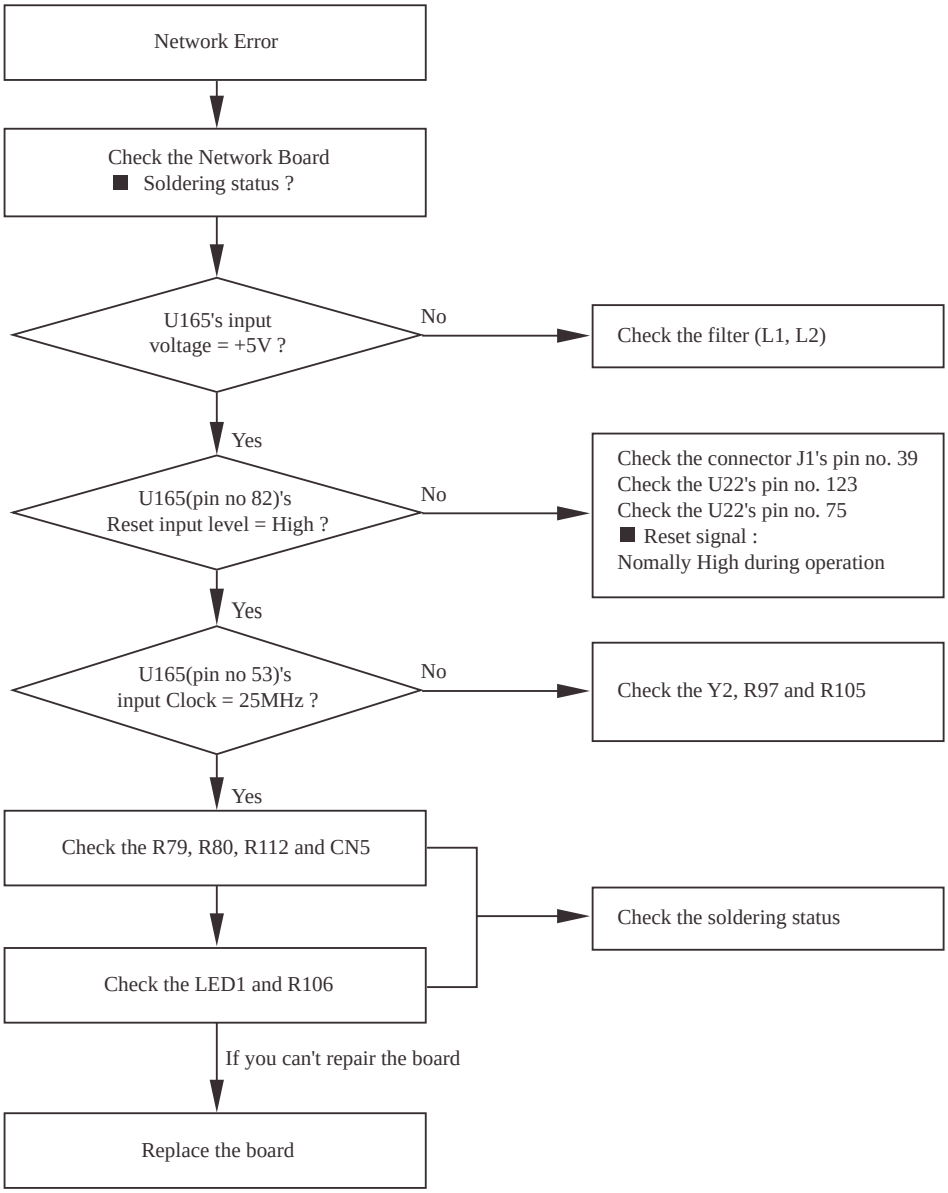

Power Error
Check the BD1 of the Network Card
Network board's input voltage = +5V ?
No
Is it short between +5V and GND in the Network board?
No
Yes
Yes
Go to System Error or Network Error Section
Replace the board
Go to System Error or Network Error Section

System Error

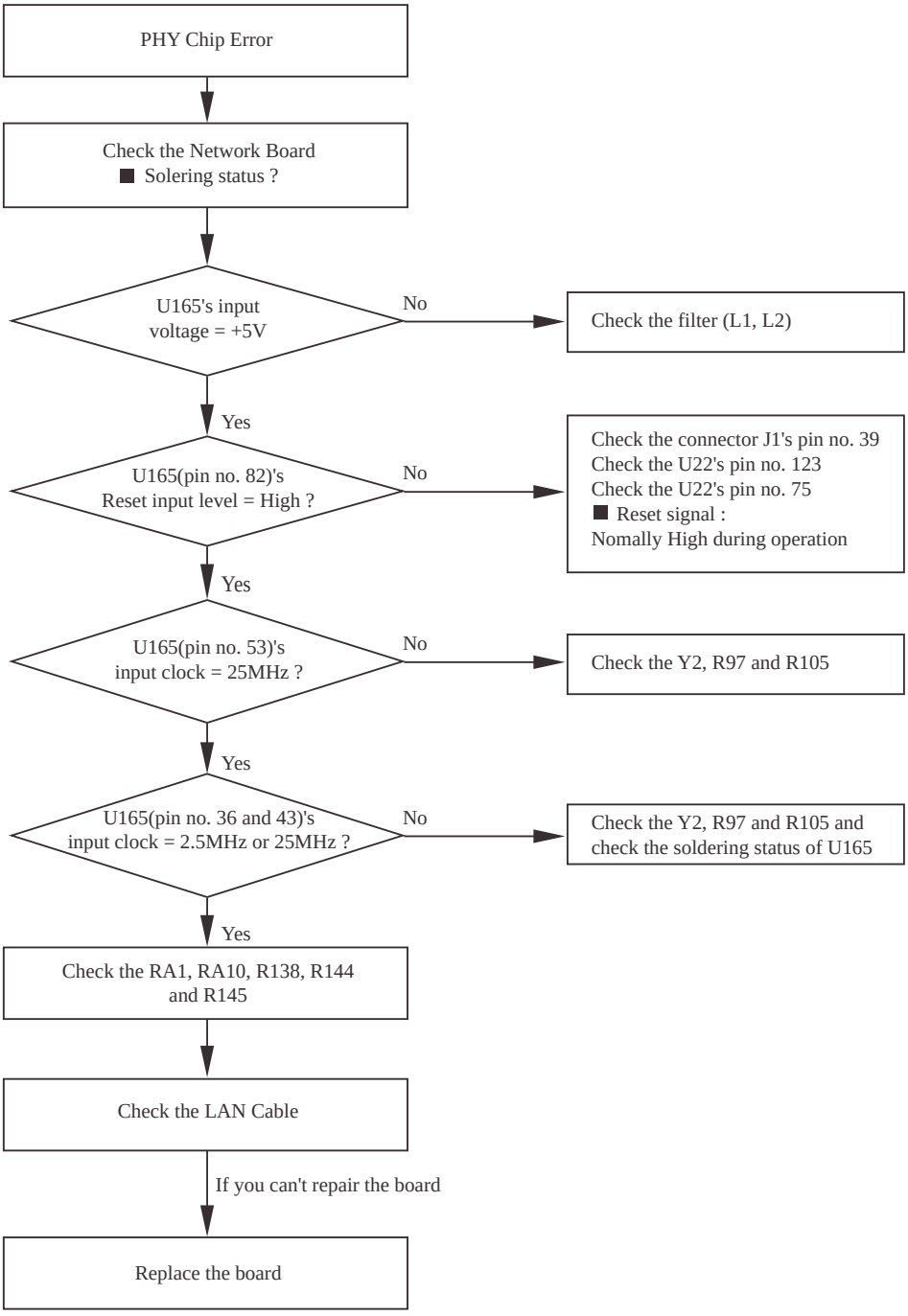
※CPU : U26
NetBridge : U22
Flash ROM : U19
DRAM : U18
PHY Chip : U165



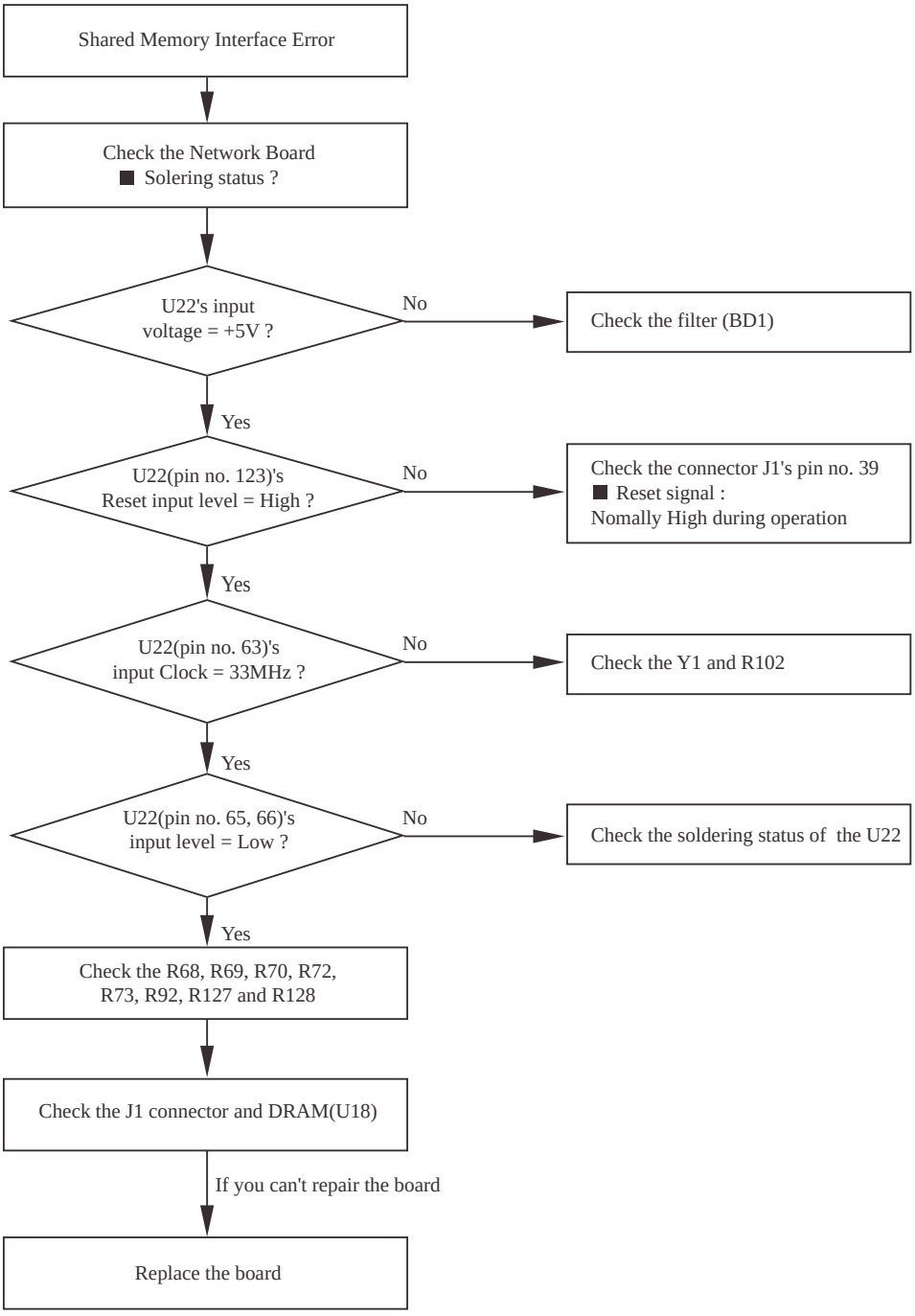
Network Error



PHY Chip Error



Shared Memory Interface Error



10-3-2 Troubleshooting Table of Network Card

No.	Error Type	Check List	Repair
1	The LEDs does not lit up	Power Connection	Check the BD1 of Network Card
		VCC voltage (nominal is +5V) level VCC voltage should be in the range between +4.75 and +5.25V	Refer to the section of Power Error Troubleshooting
		Short between VCC and GND.	Repair board
2	The status LED does not blinking	Reset Error : Reset signal is normalhigh during operation	
		System source clock is 33MHz. Check point : Y1's pin 5 and U26's pin 80	Replace the Y1.
		The output clock of U26 is 33MHz. The input clock of U26 is 33MHz.	Check the R102 and R122. If these two resistors are OK then replace the board.
		Check the ROM Chip select signals (Pin no U26-75 and U19-26)	
		Check the DRAM control signals(pin no U26-89, 95, 96, 99, 100 and U18-13, 14, 36, 37, 38)	
3	The status LED is OK but the LINK LED does not lit up	Reset Error : Reset signal is normal high during operation	
		The input clock of U165 is 25MHz.	Check the Y2, R97 and R105. If these two resistors are OK then replace the Y2
		Check the R79, R80 and R112 Check the output and input signal of U165 of RJ45 connector side. Pin no. 5, 6, 10, 11 of U165.	
4	The two LEDs are OK but can't detect the Network Printer using SyncThru from PC	Check the MII signals between U26 and U165 (Pin no. 30, 31, 32, 33, 34, 35, 36, 37, 38, 42, 43, 44, 45, 46, 47, 48, 49, 50) Check RA1, RA10, R138, R144 and R145.	Refer to the section of PHY chip error
5	The SyncThru can detect the Network Printer card but Printer does not printing.	The output clock of U26 is 33MHz. The input clock of U22 is 33MHz.	Check the R102 and R122. If these two resistor are OK then replacethe board.
		Check the Shared Memory Cotrol signals. U22-37, 38, 39 and R68, R69 and R70	Refer to the Shared Memory Interface Error Section.